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BY SIR D. K. SANDFORD, A.M., OXON., D.C.L.

ON THE PROGRESS OF SCIENCE,
BY THOMAS THOMSON, M.D., F.R.S.L. & E., &c., &c.

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ON THE PROGRESS OF THE FINE ARTS,
BY ALLAN CUNNINGHAM, ESQ.

VOLUME VII.

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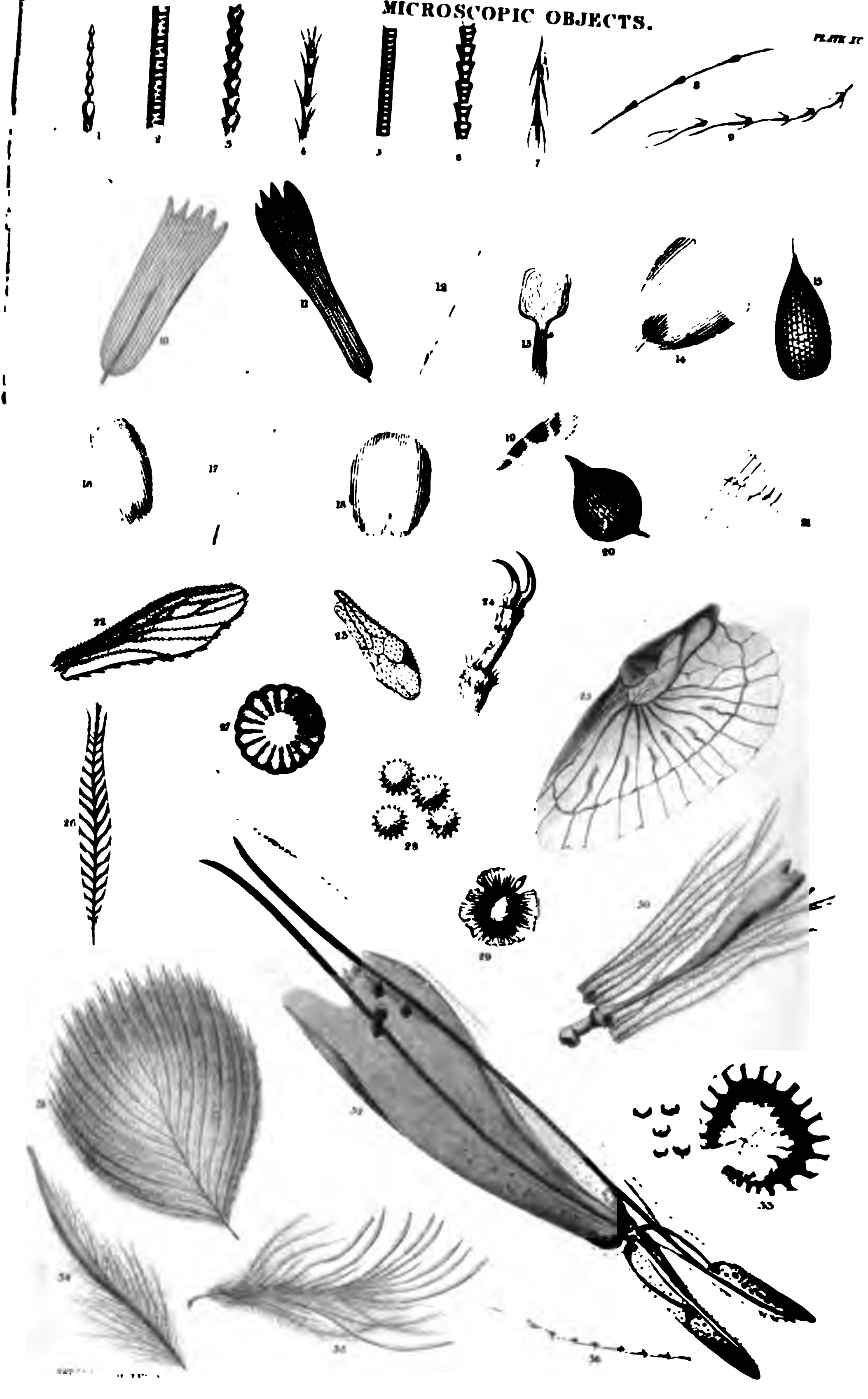

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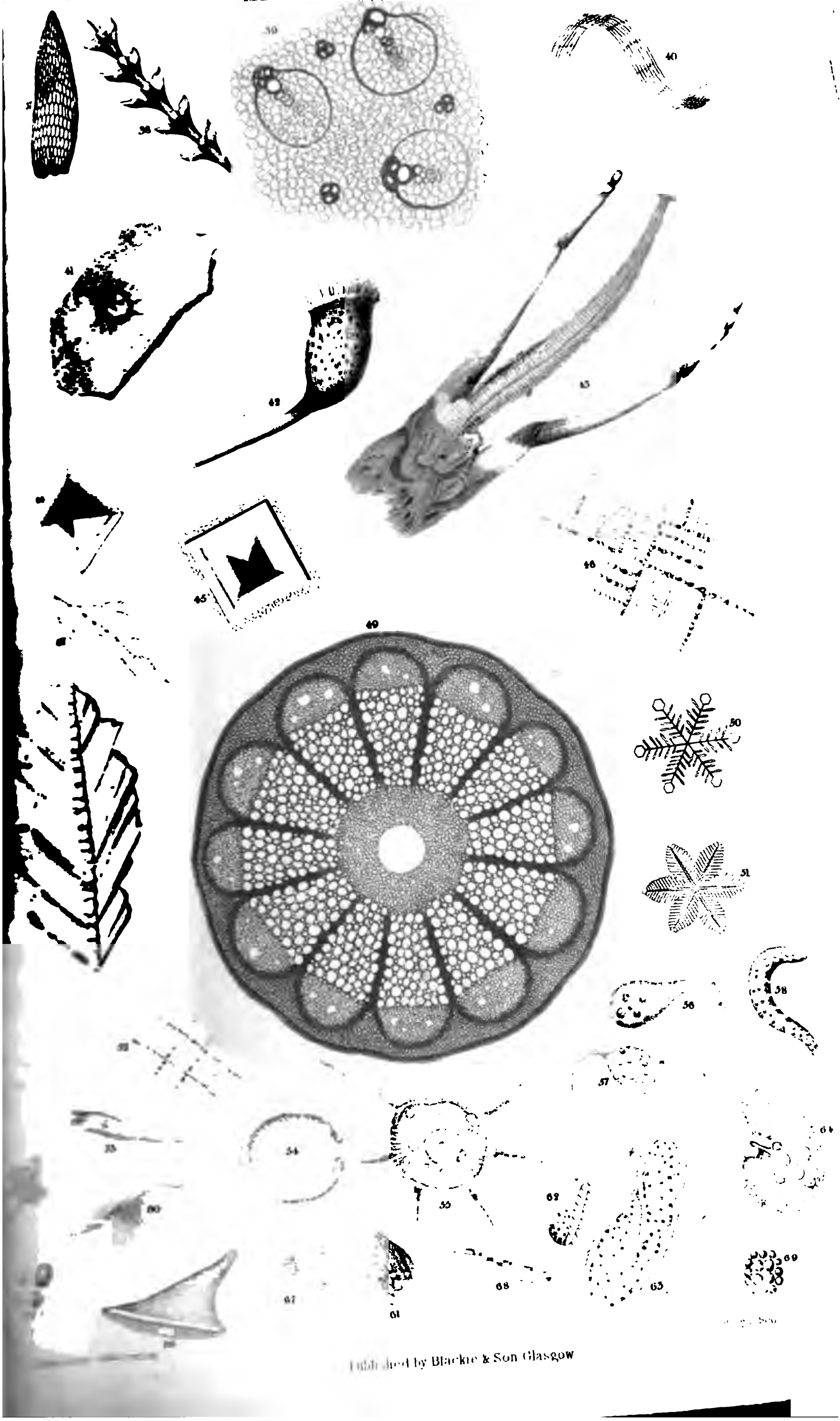

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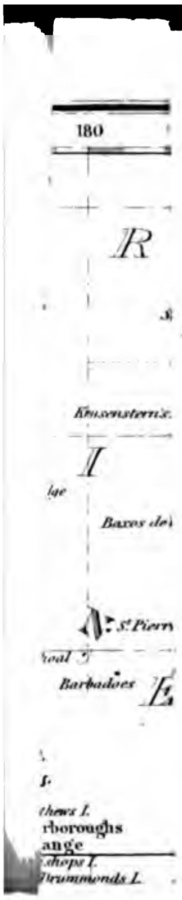
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THE

POPULAR ENCYCLOPEDIA;

OR,

CONVERSATIONS LEXICON.

WAX is a concrete, unctuous-feeling substance, which partakes of the nature of fixed oil. It is secreted by bees in constructing their hives, and is also, a most abundant vegetable production, entering into the composition of the pollen of flowers, covering the envelope of the plum, and of other fruits, especially of the berry of the *myrica cerifera*, and, in many instances, forming a kind of varnish to the surface of leaves. It is distinguished from fat and resinous bodies by its not readily forming soaps when treated with alkaline solutions. Common wax is always more or less coloured, and has a distinct, peculiar odour, both of which it may be deprived by exposure, in thin slices, to air, light, and moisture, or more speedily by the action of chlorine. The art of bleaching wax consists in increasing its surface; for which purpose it must be melted, with a degree of heat not sufficient to alter its quality; in a caldron so disposed that the melted wax may flow gradually through a pipe, at the bottom of the caldron, into a large wooden cylinder, that turns continually round its axis, and upon which the melted wax falls. As the surface of this cylinder is always moistened with water, the wax falling upon it does not adhere to it, but quickly becomes solid and flat, and acquires the form of ribands. The continual rotation of the cylinder carries off these ribands as fast as they are formed, and distributes them through the tub. When all the wax now to be whitened is thus formed, it is to be put upon large frames covered with linen cloth, which are supported about a foot and a half above the ground, in a situation exposed to the air, the dew, and the sun. If the weather be favourable, the colour will be changed in a few days. It is then to be re-melted, and formed into ribands, and exposed to the action of the air, as before. These operations are to be repeated till the wax is rendered perfectly white, when it is cast into cakes or moulded into candles. At ordinary temperatures, wax is solid and somewhat brittle; but it may be easily cut with a knife, and the fresh surface presents a characteristic appearance, to which the name of *waxy lustre* is applied. Its specific gravity is 0·96. At 150° Fahr., it enters into fusion, and boils at a high temperature. Heated to redness in a close vessel, it suffers decomposition, yielding products very similar to those which are procured under the same circumstances from oil. It is insoluble in water, and is only dissolved in small quantities when treated with boiling ether or alcohol. It unites by the aid of heat, in every proportion, with the fixed oils, the volatile oils, and with resin. With different quantities of oil, it constitutes the simple liniment ointment and cerate of the pharmacopœia. Wax, according to John, consists of two different substances, one of which is soluble, and the other insoluble, in alcohol. To the former the name of *cerin* has been given, and to the latter that of *myricin*. One hundred parts of wax are composed of

Carbon.	80·4
Oxygen.	8·3
Hydrogen,	11·3

See the article *Bee*.

WAX FIGURES. In ancient Greece, wax was used for impressions of seals, for encaustic painting, and for a varnish for marble walls and statues. There was also a distinct class of artists, called *puppet-makers* by the Greeks, and *sigillarii* by the Romans, who worked only, or chiefly, in wax. Figures of beautiful boys in wax, often adorned the bed-rooms of the Greeks. The subjects most frequently represented in wax, however, belonged to the vegetable kingdom, being branches, fruits, flowers, wreaths, &c. It was customary to construct a little garden of flower-pots and fruit-baskets, in every house, in honour of Adonis, at the time of his feast; but as this was celebrated so early in the year that even in Greece it was difficult to find flowers and fruits, wreaths, cornucopiæ, fruits, &c. of wax, were used as substitutes. In sorcery, also, wax figures were employed; and Artemidorus tells us, in his work On Dreams, that waxen wreaths in dreams foreboded sickness and death. The notorious Heliogabalus set dishes of wax before his guests, to tantalize them with representations of all the luxuries in which he revelled. At present wax is used for imitations of anatomical preparations, or of fruits; it also serves the sculptor for his models and studies, also for little portrait figures in *basso rilievo*. The latter can be executed with delicacy and beauty; but wax figures of the size of life, which are often praised for their likeness, overstep the proper limit of the fine arts. The attempt to imitate life too closely, which, in contrast with their ghastly fixedness, has a tendency to make us shudder. In the genuine work of art there is an immortal life, in idea, which speaks to our souls without attempting to deceive our senses. (See *Copy*.) The wax figure seems to address the mortal in us; it is a petrified picture of our earthly parts. The line at which a work of art should stop, in its approach to nature, is not distinctly marked; but it cannot be overstepped without affecting us disagreeably. In Florence, all parts of the human body are, at present, imitated, in coloured wax, for the study of anatomy. More than thirty rooms, in the palace, are filled with these wax preparations; also plants are found there, imitated to deception, in wax. Exact imitations in wax, of vegetable productions, do not produce the same unpleasant emotions as wax images of men and animals, because they have, by nature, a more stationary character.

The first idea of forming figures of wax of this kind was conceived by Nones, of Genoa, an hospital physician in the seventeenth century. He was about to preserve a human body by embalming it; but, not being able to prevent putrefaction entirely, he conceived the idea of having the body imitated as accurately as possible, in wax. The abbate Zumbo, a Sicilian, who understood nothing of anatomy, but was skilled in working in wax, imitated the head of the body so perfectly, under the direction of Nones, in coloured wax, that many who saw it took it to be the real head. Zumbo secretly made another copy, and went with it to France, where he pretended to have invented the art. He soon died. De Nones then had the whole body perfectly copied by a Frenchman named De Lacroix. In 1721, La Courege exhibited similar figures in Hamburg; and, in 1737, others were publicly sold in London. The works of Ercole Lelli, Giovanni Manzolini and his wife, which were formerly preserved in the institute of Bologna, and were thence carried to Paris, were remarkably fine. Beautiful figures in wax made by Anna Manzolini, are preserved in Turin and Petersburg. She died in 1755. More modern artists in this line, in Italy, are L. Calza, Filippo Balugani, and Ferrini. The celebrated Fontana, in Florence, carried this art to a high degree of excellence. He received so many orders that he employed a large company of anatomists, model cutters, wax-moulders, and painters. Yet he generally confined himself to representations of the intestines. Vogt, in the university of Wittenberg, used, in his lectures, wax preparations, in imitation of the fine branches of vessels. Pinson, and, at a later period, Laumonier, at Rouen, distinguished themselves in this department, in France. The composition for this purpose consists of four parts wax, three parts white turpentine, and some olive-oil or hog's lard, suitably coloured. The bulk of the figure is formed with the hands: the finer parts are made with instruments of various forms: some figures are cast. The moulds ought to be of gypsum, and consist of many pieces, covered inside with oil. The wax is poured into a hole at the feet, and the whole is then thrown into cold water, that the wax may be separated the more easily. A composition, of which sculptors form their first models, consists of sixteen parts wax, two parts Burgundy pitch, or shoemaker's wax, and one part hog's lard; or of ten parts wax, one turpentine, as much shoemaker's wax, and as much hog's lard. This is melted by a slow fire, and afterwards well stirred and strained, so as to expel all the air. A composition of wax and other substances is very proper for impressions of figures cut in stones. It is prepared thus:—an ounce of virgin wax, melted slowly in a copper vessel, and a drachm of sugar candy pounded well, half an ounce burnt soot, and two or three drops of turpentine. The wax is warmed if a cast is to be taken, and the stone, having been a little moistened, is pressed on it. Gem-cutters use this composition.

WAX-MYRTLE, OR BAYBERRY (*myrica cerifera*); a low, spreading shrub. The leaves are lanceolate, with a few indentures towards the extremity, and sprinkled with resinous dots. The bark and leaves, when bruised, emit a delightful fragrance. The berries are as large as a peppercorn, and, when ripe, are covered with a whitish-green wax, which is collected by boiling them: the fat then melts out, floats at the top of the water, and may be skimmed off. When congealed, it looks like tallow or wax, but has a dirty-green colour. It is therefore melted again, and refined, by which means it acquires a fine and pretty transparent green colour. It is dearer than common tallow, but cheaper than wax. A bushel of the berries will yield four or five pounds. This wax is used for a variety of purposes, but chiefly for making candles, which burn slowly and with but little smoke, emit an agreeable odour, and never melt and run down at the sides, like tallow and spermaceti; but, as they do not give a strong light, especially during cold weather, it is usual to add a portion of tallow. Such candles are a beautiful and economical article, and it is surprising they are not in more general request. A fine-scented and excellent soap, and also sealing-wax, are made from these berries. At present, however, little use is made of the bayberry, except in districts where the bushes are very abundant. It is often called *tallow-shrub*, or *candleberry-tree*. The flowers are inconspicuous, and are disposed in aments. Further information is given in the article *Myrtle-Wax*.

WAX PAINTING. See *Encaustic Painting*.

WAX, SEALING. See *Sealing-Wax*.

WEANING (of the child from its mother's breast.) The mother's milk is necessary for the new-born infant; but, after a certain period, the cutting of the teeth shows the capacity and need which the child has of receiving other sustenance. This takes place before the end of the first year. The age of twelve months, therefore, may be regarded as about the proper period for weaning. With children who are healthy, and cut their teeth early, it may take place still sooner: with weak, sickly children, it must be delayed longer, and never should be attempted during sickness or dentition. It is best for both mother and child to bring it about gradually. By so doing, the secretion of milk in the former is gradually diminished; and those complaints which arise from sudden weaning are prevented; while the child is gradually accustomed to other kinds of sustenance, and the restlessness and want of sleep, which are so troublesome in sudden weaning, are avoided. The child remains healthy and well nourished. For this, it is only necessary, that the mother should give the breast to the child less frequently, and offer it proper kinds of nourishment oftener than before. These must be, both during the weaning and some time after it, very light of digestion, and more fluid than solid: in particular, they should have no stimulating qualities, and none that will tend to create acidity, or produce other marked changes in the organic functions.

WEAPONS, See *Arms*.

WEAR; to cause a ship to change her course from one board to the other, by turning her stern to the wind. See *Ship*.

WEARMOUTH, Bishop's, and **MONK WEARMOUTH.** See *Sunderland.*

WEASEL (*mustela*); a natural group of carnivorous quadrupeds, recognised by the slender, elongated form of the body, and the shortness of the legs. The activity of these animals is astonishing; and their flexibility is such that they are enabled to pass through extremely narrow apertures. They run with great rapidity; and the form of their nails also permits their climbing on trees. Notwithstanding their small size, they are the most sanguinary of all beasts of prey, and seem rather to seek the blood than the flesh of their victims. They will leap upon the necks of animals even larger than themselves, and never quit their hold till satiated. Many are extremely destructive to poultry, and, when they gain access to them, commence an indiscriminate slaughter. They are nocturnal and solitary animals. Some of them take up their residence in the vicinity of habitations; others pass their lives altogether in the forests; and others, again, frequent the borders of streams. Their anatomical structure corresponds, in every respect, with their habits and disposition. The canines are long and pointed: the other teeth have cutting edges, and bear a general resemblance to those of the dog. The whiskers are long and coarse. The ears are small and rounded. There are five toes on each foot. The neck is almost as large as the head. The fur is usually composed of two sorts of hairs. The skins of such as inhabit northern climates are in great demand, and form one of the principal objects of the fur trade.

The European pole-cat (*M. putorius*), is fifteen or eighteen inches in length from the nose to the origin of the tail. The general colour is blackish-brown, paler on the sides, with white spots on the head. It lives in the vicinity of farm-houses, and is very destructive to poultry, rabbits, &c. It emits a strong and very disagreeable odour, but not at all comparable to that of the skunk.

The ferret (*M. furo*), is perhaps only a variety. The colour is yellowish, or sometimes white, with the eyes red. It is only known in the domesticated state, and is employed to drive rabbits out of their burrows. According to Strabo, it was brought originally from Africa.

The ermine (*M. erminea*), is about nine inches in length from the nose to the base of the tail; and the latter measures about four inches. In summer, the colour is chestnut-brown above, and yellowish-white beneath; and in this state, the animal is sometimes called the *stoat;* but, in winter, it is entirely pure white, with the exception of the tip of the tail, which is black at all seasons. It is fond of wild and rocky situations, and is found in all the extreme northern parts of the globe. The winter skins form a well-known article of commerce. It is very abundant in the vicinity of Hudson's bay.

The true weasel (*M. vulgaris*), is only about six inches in length to the base of the tail, and the tail an inch and a half. The upper parts of the body, as well as the tail, are clear brown, and the under parts generally white. It is found in the temperate parts of the eastern continent, and frequents the vicinity of habitations.

The mink (*M. lutreola*) is entirely of a deep-brown, except a white spot on the lower lip, which sometimes extends in a straight line to the middle of the throat. This animal lives in the vicinity of water-courses, and feeds on frogs, fish, &c.: in short, in habits and appearance, it strongly resembles the otter in miniature. The membrane which connects the toes is remarkable for its extent, which structure renders the animal better adapted for an aquatic life: accordingly, the mink swims and dives with great facility, and can remain under water for a considerable length of time. It does not, however, confine itself strictly to the water, but sometimes invades the poultry yards, when it commits as great ravages as any of the tribe. It is found throughout North America, from Carolina to Hudson's bay, and is also common in the north of Europe and Siberia.

The pine martin (*M. martes*) is nearly as large as a cat. The colour is a brilliant fulvous brown, inclining to blackish on the limbs and tail, with a large yellowish patch on the throat. It lives only in the depths of the forest, ascending trees to surprise birds and squirrels, and often occupying the nest of the latter for the purpose of bringing forth its young. It is found in the northern parts of both continents. A vast amount of the skins are annually collected in Canada. The fur is used in manufacturing hats, and is most generally preferred for ornamenting and increasing the warmth of winter dresses.

The European martin (*M. foina*) is distinguished from the preceding by a large patch of white on the throat. It appears to be confined to Europe.

The fisher, or pekan (*M. Canadensis*), is readily distinguished by its larger size, being from twenty-four to thirty inches long, exclusive of the tail, which measures from thirteen to seventeen inches. The general colour is brown, with some of the hairs grayish at the extremities. The name is an improper one, for it by no means frequents the vicinity of water, but preys on small quadrupeds, birds and their eggs, &c.: indeed, its mode of life is similar, in every respect, to that of the pine martin. It is peculiar to North America, and is found from Pennsylvania to the sixty-second parallel of latitude.

The sable (*M. zibellina*). All the preceding species have naked tubercles on the soles of the feet, but, in the sable, these parts are entirely covered with hair. The general colour of the fur is brown, more or less brilliant, with the inferior parts of the throat and neck grayish. It lives in the same manner as the pine martin, in the depths of the forest, and inhabits all the northern parts of Europe and Asia. This is the most celebrated of the tribe, not only on account of the richness of the fur, but from the horrors of the chase, carried on in the depth of winter, among mountains covered with ice, and in the deepest snows, in the coldest and most desolate regions to which man has yet penetrated. It was the search for sables which led to the discovery of Eastern Siberia. Their skins form a considerable article of commerce with the Russians.

M. huro of F. Cuvier is a species from Canada, having the fur almost as fine as that of the sable, and the soles of the feet covered with hair in a similar manner, but of a pale yellowish-brown colour, with the feet and tail darker. Little is known of this animal, or of the district which it inhabits. A specimen was obtained by Lewis and Clarke, during their journey to the Pacific, and is now deposited in the Philadelphia museum. According to Pallas, skins of the sable are common among the furs sent from the extreme north-western point of America to the inhabitants of the opposite angle of Asia.

WEAVING, the art of producing cloth, by the combination of flexible fibres, is performed upon a frame called a *loom*, the invention of which is attributed to the Egyptians. It has, however, received many modifications and great improvements in modern times, and is differently constructed, according to the nature of the texture to be produced. The art of weaving, both by the hand and by the power of steam or water, will be described in the Supplement to this work. Meanwhile, we give the following short summary of the processes of dressing and weaving from Bigelow's Technology.

"*Dressing.* As the threads which constitute the warp are liable to much friction in the process of weaving, they are subjected to an operation called *dressing*, the object of which is to increase their strength and smoothness, by agglutinating their fibres together. To this end, they are pressed between rollers impregnated with mucilage made of starch, or some gelatinous material, and immediately afterwards brought in contact with brushes, which pass repeatedly over them, so as to lay down the fibres in one direction, and remove the superfluous mucilage from them. They are then dried by a series of revolving fans, or by steam cylinders, and are ready for the loom.

Weaving. Woven textures derive their strength from the same force of lateral adhesion, which retains the twisted fibres of each thread in their situations. The manner in which these textures are formed is readily understood. On inspecting a piece of plain cloth, it is found to consist of two distinct sets of threads running perpendicularly to each other. Of these, the longitudinal threads constitute the *warp*, while the transverse threads are called the *woof*, *weft*, or *filling*, and consist of a single thread passing backwards and forwards. In weaving with the common loom, the warp is wound upon a cylindrical beam or roller. From this the thread passes through a *harness*, composed of movable parts, called the *heddles*, of which there are two or more, consisting of a series of vertical strings, connected to frames, and having loops through which the warp passes. When the heddles consist of more than one set of strings, the sets are called *leaves*. Each of these heddles receives its portion of the alternate threads of the warp, so that, when they are moved reciprocally up and down, the relative position of the alternate threads of the warp is reversed. Each time that the warp is opened by the separating of its alternate threads, a *shuttle*, containing the woof, is thrown across it, and the thread of woof is immediately driven into its place by a frame called a *lay*, furnished with thin reeds or wires, placed among the warp like the teeth of a comb. The woven piece, as fast as it is completed, is wound up on a second beam opposite to the first. Power looms driven by water or steam, although a late invention, are now universally introduced into manufactories of cotton and wool.

As the motions of the loom are chiefly of a reciprocating kind, they are produced, in some looms, by the agency of cranks, and in others by cams or wipers, acting upon weights or springs.

Twilling. In the mode of plain weaving last described, it will be observed that every thread of the warp crosses at every thread of the woof, and *vice versa*. In articles which are *twilled* or *tweeled*, this is not the case; for, in this manufacture, only the third, fourth, fifth, sixth, &c. threads cross each other to form the texture. In the coarsest kinds, every third thread is crossed; but, in finer fabrics, the intervals are less frequent, and, in some very fine twilled silks, the crossing does not take place till the sixteenth interval. A loom invented in the United States of America, by Mr Batchelder, of Lowell, has been applied to the weaving of twilled goods by water-power. Twilled fabrics are thicker than plain ones when of the same fineness, and more flexible when of the same thickness. They are also more susceptible of ornamental variations. Jeans, dimoties, serges, &c., are specimens of this kind of texture.

Double Weaving. In this species of weaving, the fabric is composed of two webs, each of which consists of a separate warp and a separate woof. The two, however, are interwoven at intervals, so as to produce various figures. The junction of the two webs is formed by passing them at intervals through each other, so that each particular part of both is sometimes above and sometimes below. It follows that, when different colours are employed, as in carpeting, the figure is the same on both sides, but the colour is reversed. The weaving of double cloths is commonly performed by a complicated machine, called a *draw-loom*, in which the weaver, aided by an assistant, or by machinery, has the command of each particular thread by its number. He works by a pattern, in which the figure before him is traced in squares, agreeably to which the threads to be moved, are selected and raised before each insertion of the woof. Kidderminster carpets and Marseilles quilts are specimens of this mode of weaving.

Cross Weaving. This method is used to produce the lightest fabrics, such as gauze, netting, catgut, &c. In the kinds of weaving which have been previously described, the threads of the warp always remain parallel to each other, or without crossing. But, in gauze weaving, the two threads of warp which pass between the same splits of the reeds, are crossed over each other, and partially twisted, like a cord, at every stroke of the loom. They are, however, twisted to the right and left alternately, and each shot, or insertion of the woof, preserves the twist which the warp has received. A great variety of fanciful textures are produced by variations of the same general plan."

WEBER, Godfrey, a theoretical and practical musician, born at Freinsheim, near Manheim, in 1779, studied law, and received an appointment as jurist, but, at the same time, devoted himself to music. The flute and violoncello were his instruments. He subsequently occupied himself chiefly with the theory of music, and published numerous articles on this subject in the Leipsic and Vienna Musical Gazettes, in the great German Encyclopædia (edited by Ersch and Gauber), in the musical gazette called *Cæcilia*, edited by himself, &c. &c., and in his distinguished work, Essay towards a systematic Theory of the Art of Composition for Self-instruction, with Notes for Scholars (2d ed. 1824 seq., 4 vols.), and his General Doctrine of Music for Teachers and Learners (Darmstadt, 1822). He was eventually appointed advocate-general of the court of cassation in Darmstadt, and received titles and orders. He composed many songs, also a collection called the *Lyre and Sword*, not to be confounded with the songs under the same title composed by Charles Maria von Weber. There are also other compositions of his. He invented the musical chronometer. (See *Time*.) His inquiries respecting the genuineness of Mozart's requiem, have involved him in various controversies.

WEBER, Henry William, was the son of a native of Westphalia, who was married to an English lady, and settled as a merchant at St Petersburg, where the son was born in 1783. His father dying when he was but three years old, his mother removed into Saxony, and her son received his education at a Germany university. At the age of fourteen he quitted Germany for England, and, adopting the profession of medicine, attended lectures one winter at Edinburgh, and then went to finish his studies at Jena. Returning to Edinburgh to obtain a medical diploma, he there formed an acquaintance with Sir Walter Scott, who employed him in various literary labours. In 1808, he commenced his career by publishing a new edition of the Battle of Flodden Field, a Poem of the Sixteenth Century, which was followed by Metrical Romances of the Thirteenth, Fourteenth, and Fifteenth Centuries, from ancient Manuscripts, with an Introduction, Notes, and a Glossary (3 vols.); and, in conjunction with Jamieson, he produced a work entitled Illustrations of Northern Antiquities, from the earliest Teutonic and Scandinavian Romances (1814, 4to.). In September, 1816, Mr Weber became disordered in his intellects, in which state he remained till his decease, in 1818. Besides the works already noticed, Mr Weber published editions of the Plays of Ford (2 vols, 8vo.), and of those of Beaumont and Fletcher (14 vols.); but his execution of these undertakings did not add to his reputation; and his errors as a dramatic commentator, were exposed by Mr Gifford.

WEBER, Charles Maria von, was born Dec. 18, 1786, at Eutin, in Holstein, and received a very careful education. Painting and music occupied his attention in his leisure hours. His efforts in the former art were not without success. But music gradually took entire possession of him. As soon as his father observed the promise of distinguished talent in his son, he fostered it with great care. Towards the end of the year 1798, he went to Munich, and his talent for dramatic music began to develope itself. He wrote, under the eyes of his teacher, an opera called the Power of Love and Wine; also a mass, and other compositions, all of which he subsequently burned. Soon after, he became possessed with the idea of excelling Sennafelder's new invention of lithography. He thought that he had discovered a better process, and went with his father to Freiberg, in Saxony, where all the necessary materials seemed to be at hand. But he soon gave up his idea, and with redoubled zeal resumed his application to his music. Six variations of his were published at that time in Munich. When a boy of fourteen, he composed an opera (the Maid of the Wood), which was performed in 1800, and acquired a celebrity subsequently disagreeable to the author, who had come to consider it a very immature production. In 1802, he made a musical journey with his father, and collected and studied theoretical works on music with the greatest zeal, and, having been led, by his own reflections, to study harmony thoroughly, formed a musical system of his own, in which he adopted the excellent rules of the old masters. He went to Vienna, where he became acquainted with the immortal Haydn, and with Vogler, who received him with great kindness. By Vogler's advice, he gave up for a time, though with reluctance, the composition of large pieces, and studied for two years the works of the greatest masters. At the same time, he acquired great proficiency in playing on the piano. During this time, he published only a few small works. He then went, as musical director, to Breslau, where he composed the greatest part of *Rübezahl*, an opera by Rhode. In 1806, Eugene, duke of Würtemberg, induced him to go to Carlsruhe, in Silesia, where he wrote two symphonies, several concerts, &c. He soon after followed the duke to Stuttgard, where he wrote his opera *Silvana;* re-wrote his cantata the First Tone, several overtures, &c.; and composed much for the piano. In 1810, he set out for France, Munich, Berlin, &c., and wrote his opera *Abu-Hassan*. From 1813 to 1816, he directed the opera in Prague, where he composed the great cantata Battle and Victory, which, though imposing by its grandeur and copiousness of ideas, does not yet show a settled style. Living only for his art, he gave up his place, when his purpose—the entire re-organization of the opera, was effected. In 1816, he lived in Berlin, where he received an invitation to form a German opera at Dresden, which he accepted, and to which he devoted all his powers. There he wrote, besides several instrumental pieces, various occasional cantata; a mass and offertorium (1818) for the day of the king's baptism, which was afterwards followed by a second one; and his *Der Freyschütz* (text by Kind), which was first performed in Berlin in 1821, and since that time has acquired universal reputation; and several melodies, which, like some of Mozart's, are sung, and even whistled, wherever Europeans or their descendants are found. At the same time, he composed the music for *Preziosa*. The uncommon success of *Der Freyschütz* procured him an invitation to compose an opera for Vienna, for which purpose madame de Chezy wrote for him *Euryanthe*, after an old French tale. This work occupied him chiefly from 1822 to the autumn of 1823; and, in September of the same year, he travelled to Vienna to direct its performance, which took place, for the first time, October 25, 1823. It met with great applause. In 1824, Weber received from London an invitation to compose *Oberon* for Covent-garden theatre. The first act was sent him at the same time. He prepared himself for it by studying English. But the numerous duties of his appointment, often increased by the addition of those of his colleague, Morlachi, who was in ill health, and often went to Italy, together with his devotion to study, impaired his health. He went, in the summer of 1825, to Ems. Towards the end of 1825, he directed the performance of his *Euryanthe* on the stage of Berlin. His health grew worse in 1826. In February, he went to London, where he finished his magnificent *Oberon*, directed the performance of it, and on the day when *Der Freyschütz* was to be performed for his benefit (June 5), breathed his last. Weber made an epoch in opera music, produced much that was new, applied the instruments with great effect, and, in fact, gave a new life to the opera. The songs of the spirits in *Oberon* have a peculiarly ideal character. Unfortunately, his comic opera the Three Pintos, on which he had laboured for several years, was left unfinished. Weber united many great musical qualities: he was not only one of the most original composers, a great performer, showing peculiar originality in piano playing, an ardent, judicious and intelligent director, equally at home in the æsthetical and in the technical parts of his art,—but also a very intellectual and accomplished man, with higher and more philosophical views of life than artists often have. Besides the works already mentioned, his published compositions comprise a number of instrumental pieces especially for concertando instruments, and calculated for accomplished performers (concerts, concertinos, pot-pourris and harmony pieces for the piano-forte, clarionet, bassoon, horn, violoncello, sonatas, variations, polonaises and dances, some symphonies, and a quintetto for the clarionet), various cantatas, vocal pieces for four voices, and songs (particularly the compositions of Körner's Lyre and Sword, which have become truly national songs of the Germans). The Posthumous Works of Ch. M. von Weber (Dresden, 1828), containing the results of his views and experience, are of much interest. Weber was an excellent man, a kind husband, a careful father, and a faithful friend.

WEBSTER, John, a dramatic poet of the seventeenth century, was clerk of the parish of St Andrew, Holborn, and a member of the company of merchant tailors. His works are the White Devil, or the Tragedy of P. Giordano Ursini, Duke of Brachiano, with the Life and Death of Vittoria Corombona, the famous Venetian Courtesan (1612); the Devil's Law-Case, a tragi-comedy (1623); the Duchess of Malfy, a tragedy (1623); Appius and Virginia, a tragedy (1654); the Thracian Wonder, a comical history (1661); and a Cure for a Cuckold, a comedy (1661). He was also the author of a pageant, exhibited in 1624, by the tailors' company; and he assisted Dekker in writing Wyatt's History.

WECHABITES. See *Wahabees.*

WEDDERBURN, Alexander, earl of Rosslyn, a distinguished English lawyer, eldest son of Peter Wedderburn, one of the senators of the college of justice in Scotland, was born in 1733, and bred to the law in his native country, but early removed to the Middle Temple, by which society he was called to the bar in 1757. He rapidly acquired reputation, and also obtained the patronage of the earls of Bute and Mansfield. He was appointed solicitor-general in 1771, in which office he insulted Franklin, in arguing before the privy council on American affairs. In 1778, he was made attorney-general, and, in 1780, chief justice of the common pleas, with the title of lord Loughborough. He adhered to the party of Mr Fox when Mr Pitt first came into power; but joined the administration, with many others, under the alarm produced by the French revolution in 1793, when he succeeded lord Thurlow as chancellor, which office he held until 1801, when he retired with the title of earl of Rosslyn. As a lawyer, he was able, plausible, subtle and eloquent; as a politician, rather a partisan than a statesman, but serviceable to the side which he espoused. He died without issue, January 3, 1805. Lord Rosslyn wrote a work on the management of prisons.

WEDDING, WEDLOCK. See *Marriage*, and *Husband and Wife.*

WEDGE. See *Mechanics.*

WEDGWOOD, Josiah, an ingenious improver of the pottery manufacture, was born in August, 1730, and was the younger son of a potter, at Burslem, in Staffordshire, to whose business he succeeded. He soon distinguished himself by his discoveries of new species of earthen ware and porcelain, as well as by the taste and fancy displayed in the forms and decorations of the various results of his ingenuity. So important was the result, that in a very few years he turned the current of importation of the finer earthen wares into that of exportation. In 1763, he obtained a patent for a new species of ware, which received the name of *queen's ware*, and, continuing his experimental researches, added six other different species of ware to the English manufacture. He was versed in several branches of natural philosophy, and invented a pyrometer for measuring the higher degrees of heat employed in the various arts. He was also the proposer of the Grand Trunk canal, uniting the Trent and Mersey, and subsequently communicating with the Severn and the Grand Junction canal. To this navigation, which was of the greatest benefit to the pottery district, he added a turnpike-road, ten miles in length, which gave still greater facilities to that extensive branch of manufacture. His own pottery was near Newcastle-under-Line, in Staffordshire, where he built a village, which he called Etruria. In 1786, he was the promoter of an association in London, denominated the general chamber of the manufactures of Great Britain; and he much distinguished himself by opposing Mr Pitt's proposition for adjusting the commercial intercourse between Great Britain and Ireland. His death took place January 3, 1795, in his sixty-fourth year. To great public spirit and an open hand in the distribution of the large fortune which he acquired by his spirit and enterprise, in beneficial objects and institutions, Mr Wedgwood united great private benevolence, and was a benefactor to the poor in the most enlarged sense of the term. He was a member of the royal and antiquarian societies. A striking bust of him, by Nollekins, is placed in the chancel of the parish church of St Peter, Stoke-upon-Trent. See *China Ware* and *White Ware.*

WEDNESDAY; the fourth day of the week (in Latin, *dies Mercurii*, whence the French *Mercredi*, the Italian *Mercoledi*, &c.). The Germans call it *Mittwoche* (mid-week). The English name is derived from the old Scandinavian deity Odin or Woden. In Anglo-Saxon, it is *Vodensdag;* in Swedish, *Odensdag;* in Dutch, *Woensdag.* We find the same prefix in the name of some English towns: Wednesbury, Wednesfield, &c. See *Week.* See, also, *Ash-Wednesday.*

WEEK. The week approaches pretty nearly to a quarter of a lunation; but this division of time has no obvious foundation in nature. It appears, notwithstanding, to have prevailed very extensively over the world from the earliest times; and, what is remarkable, the days of the week are generally named after the sun and planets, only six planets having been known to the ancients. This manner of distinguishing a series of seven days is found to be the same among the ancient Egyptians, Indians and Chinese. Still the order is not that of the distances, magnitude or brightness of the planets. The following ingenious conjecture has been adopted to account for the origin of the names and arrangement of the days of the week:—The planetary arrangement of Ptolemy was thus: 1. Saturn; 2. Jupiter; 3. Mars; 4. the Sun; 5. Venus; 6. Mercury; 7. the Moon. Each of these planets was supposed to preside successively over each hour of the twenty-four of each day, in the order above given. In this way, Saturn would preside over the first hour of the first day, Jupiter over the second hour, Mars over the third, the sun over the fourth, and so on. Thus the sun, presiding over the fourth, eleventh and eighteenth hours of the first day, would preside over the first hour of the second day; and, carrying on the series, the moon would preside over the first hour of the third day, Mars over the first hour of the fourth day, Mercury over the first hour of the fifth day, Jupiter over the first hour of the sixth day, and Venus over the first hour of the seventh day. Hence the names of the days yet used in the learned professions: 1. *dies Saturni* (Saturday); 2. *dies Solis* (Sunday); 3. *dies Lunæ* (Monday); 4. *dies Martis* (Tuesday); 5. *dies Mercurii* (Wednesday); 6. *dies Jovis* (Thursday); 7. *dies Veneris* (Friday). The English names of the days of the week are derived from the Saxons, and are partly adopted from the more civilized nations of antiquity. For the etymology of the English names, see the separate articles.

WEENINX, JOHN BAPTIST, a celebrated Dutch painter, was born at Amsterdam, in 1621. He was the son of an architect, and became the pupil of Abraham Bloemart. After residing some time in Italy, he returned to Holland, and settled at Utrecht, where he died in 1660. He painted small landscapes, animals and historical pieces with great accuracy and perfection, but was deficient in variety.—His son *John*, born at Amsterdam, in 1644, was more distinguished. He studied at first under his father, and acquired great skill in the delineation of animals. Still life, the chase, dead game, &c., are represented in his works with an inimitable truth and great beauty of colouring. He died at Amsterdam, in 1719.

WEEVIL (*curculio*); a genus of hard-shelled beetles, easily recognised by having the head prolonged into a long horny snout, at the end of which the mouth is situated. By later naturalists, this has very justly been considered as a family of insects, and has been divided into numerous genera. These insects have four joints to each of the tarsi; the antennæ arise from the snout above mentioned, are usually clavate, and in most of the genera form an angle at the apex of the first joint: the abdomen in all is large. The larvæ are entirely destitute of feet, and live, some in the interior of seeds, others in wood, in the interior of stems, under the bark of trees, in fruits, in the hardest nuts, and some even in the interior of the bodies of other insects. In their perfect state, all these insects feed on different parts of plants, but especially on leaves and the petals of flowers.

The weevil proper (*calandra granaria*) is best known on account of the ravages it commits among grain, sometimes destroying one third or one fourth of the whole crop. Each larva, as soon as born, penetrates into the interior of a grain, and feeds on its substance till it has attained its full size; then undergoes a change, and takes the form of a chrysalis; and in due time the perfect insect perforates the hull, which is now nearly empty.

The *C. oryzæ* very much resembles the preceding. It lives in rice, but is observed to attack principally those grains from which the hulls have not been detached.

WEIGEL, VALENTINE. See *Weigelians*.

WEIGELIANS were a Protestant sect in the seventeenth century, chiefly resident in Upper Saxony, founded by Val. Weigel, pastor of Tschopau, in the Saxon Erzgebirge (born in 1533, died in 1588), a pious and popular minister. The writings of Theophrastus Paracelsus, and of Tauler, had led him to entertain peculiar views, which he set forth in his works. These, however, were not published till long after his death (1611—21). He speaks much of an unborn inner light. The theology taught at the universities is false in his eyes. All creatures are effluxes of the Divine Being. His view of the Trinity was peculiar. He set little value on outward worship, and depicts the ministers of the Protestant church in black colours. Several of his works were burnt in 1624, at Chemnitz; but they had already gained many adherents. Jacob Böhme was a Weigelian.

WEIGHTS. In the article *Measures*, we have given an account of the reformation of the English measures. The article *France*, division *Decimal System of France*, explains the principles of the new French measures. The following tables exhibit the relations of some of the most important measures of weight.

1. *French Measures of Weight.*—The unit used in weighing is the kilogramme. It has been fixed by law, and is equal to the specific weight of the distilled water contained in one cubic decimètre. The kilogramme thus fixed was found to be equal to 2 livres (pounds), 5 gros, 35 grains, $\frac{18}{100}$ poids de marc, and to 2 lbs. 8 oz. 3 dwt. 6·355 grains troy, or 2 lbs. 2 oz. 4 drams, 16 grains avoirdupois weight, English. As the most common things of daily consumption are sold by weight in small quantities, a great difficulty arose in introducing this part of the system; and the old denominations of weight have therefore been allowed to remain, with some modification in their actual value, taking the kilogramme as the basis. The kilogramme is divided into 2 livres; the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains. This new livre, therefore, exceeds the old one (poids de marc) by $\frac{2}{100}$; so, to reduce kilogrammes into old measure, it is necessary to multiply by 2 and add $\frac{2}{100}$.

English Troy.		*French.*
1 grain (1-24th of a dwt.)	=	0·06477 gramme.
1 pennyweight (1-20th of an ounce)	=	1·55456 gramme.
1 ounce	=	31·0913 grammes.
1 pound troy imperial	=	0·3730956 kilogramme.

English Avoirdupois.		*French.*
1 dram (1-16th of an ounce)	=	1·7712 gramme.
1 ounce (1-16th of a pound)	=	28·3384 grammes
1 pound avoirdupois imperial	=	0·45341·8 kilogram
1 hundred weight (112 pounds)	=	50·78246 kilogrammes
1 ton	=	1015 649 kilogrammes.

1 millier = 1000 kilogrammes weight of a tun of sea-water).
1 quintal = 100 kilogrammes
1 hectogramme = 1-10th of a kilogramme.
1 decagramme = 1-100th ..
1 gramme = 1-1000th ..
1 decigramme = 1-10,000th ..

2. *English Measures of Weight.*—The statute of 5 George IV., c. 74, made some slight modifications in the measures of weight, but retained, in the main, the existing measures. "The troy weight," say the commissioners of weights and measures, "appeared to us to be the ancient weight of this kingdom, having existed in the same state from the time of Edward the Confessor; and there are reasons to believe that the word *troy* has no reference to any town in France, but rather to the monkish name given to London of Troy Novant, founded on the legend of Brute: troy weight, therefore, according to this etymology, is, in fact, London weight. We were induced, moreover, to preserve the troy weight, because all the coinage has been uniformly regulated by it; and all medical prescriptions or *formulæ* always have been estimated by troy weight, under a peculiar subdivision, which the college of physicians have expressed themselves most anxious to preserve." It was resolved, therefore, to continue the use of troy weight, and also, on account of the accuracy of the troy standard, to raise the avoirdupois weight from this basis. "We found," continue the commissioners, "the avoirdupois weight, by which all heavy goods have been for a

long time weighed (probably derived from *avoirs* (*averia*), the ancient name for goods or chattels, and *poids*, weight), to be universally used throughout the kingdom. This weight, however, seems not to have been preserved with such scrupulous accuracy as troy weight, by which more precious articles have been weighed; but we have reason to believe that the pound cannot differ by more than one, two or three grains, from 7000 grains troy. It, therefore, occurred to us, that we should be offering no violence to this system of weights, if we declared that 7000 grains troy should be hereafter considered as the pound avoirdupois." It was accordingly enacted that, from January 1st, 1826, the standard brass weight of one pound troy weight, made in 1758, should be the genuine standard measure of weight, and be denominated the imperial standard troy pound, containing 5760 grains, and that 7000 such grains should be a pound avoirdupois.

DIVISION I.—*Avoirdupois Weight.*

27 11/32 grains	= 1 dram	=	27 11/32 grains
16 drams	= 1 ounce	=	437½ ..
16 ounces	= 1 pound (lb.)	=	7000 ..
28 pounds	= 1 quarter (qr.)		
4 quarters	= 1 hundred weight (cwt.)		
20 hundred weight	= 1 ton		

This weight is used in almost all commercial transactions, and in the common dealings of life.

Particular Weights belonging to this Division.

			cwt.	qr.	lb.	
8 pounds	= 1 stone					used for meat and fish
7 pounds	= 1 clove					used in the wool trade.
14 pounds	= 1 stone	=	0	0	14	
2 stone	= 1 tod	=	0	1	0	
6½ tod	= 1 wey	=	1	2	14	
2 weys	= 1 sack	=	3	1	0	
12 sacks	= 1 last	=	39	0	0	

A pack of wool contains 240 lbs. A truss of hay weighs 56 lbs., and of straw 36. A stone of glass is 5 lbs.; a seam 24 stone.

8 pounds	= 1 clove,	used for cheese and butter.
32 cloves	= 1 wey in Essex,	
42 ..	= .. in Suffolk,	
56 pounds	= 1 firkin,	

DIVISION II.—*Troy Weight.*

24 grains	= 1 pennyweight	=	24 grains.
20 pennyweights	= 1 ounce	=	480 ..
12 ounces	= 1 pound	=	5760 ..

These are the denominations of troy weight when used for weighing gold, silver, and precious stones, except diamonds. But troy weight is also used by apothecaries in compounding medicines, and by them the ounce is divided into eight drams, and the dram into three scruples, so that the latter is equal to twenty grains. For scientific purposes, the grain only is used; and sets of weights are constructed in decimal progression, from 10,000 grains downwards to one hundredth of a grain. By comparing the number of grains in the avoirdupois and troy pound and ounce respectively, it appears that the troy pound is less than the avoirdupois, in the proportion of fourteen to seventeen nearly; but the troy ounce is greater than the avoirdupois, in the proportion of seventy-nine to seventy-two nearly. The *carat*, used for weighing diamonds, is 3⅕ grains. The term, however, when used to express the fineness of gold, has a relative meaning only. Every mass of alloyed gold is supposed to be divided into twenty-four equal parts; thus the standard for coin is twenty-two carats fine, that is, it consists of twenty-two parts of pure gold, and two parts of alloy. What is called the *new standard*, used for watch-cases, &c., is eighteen carats fine.

3. *Ancient Weights.*—It is well known that this subject is involved in considerable difficulty. The following table gives the estimates of different authors, in regard to some of the ancient weights.

		English Troy Grains.
Attic obolus	=	8·2 Christiani. 9·1 Arbuthnot.
Attic drachma, ...	=	51·9 Chr. 51·6 Arb. 66 Paucton.
Lesser mina	=	3,492 Chr.
Greater mina	=	5,189 Chr. 5,464 Arb. 6,900 Pauc.
Medical mina	=	6,994 Arb.
Talent = 60 minæ........	=	½ cwt. English.
		Grains.
Old Greek drachm	=	146·5 Arb
Old Greek mina	=	6,425 ..
Egyptian mina	=	8,326 ..
Ptolemaic mina of Cleopatra	=	8,988 ..
Alexandrian mina of Dioscorides	=	9,962 ..
Roman denarius	=	51·9 = ⅛ Roman oz. Chr. 62· = Roman oz. Arb
Denarius of Nero	=	54 Pauc.
Ounce....................	=	415·1 Chr. 437·2 Arb. 431·2 Pauc.

Pound = 12 Roman ounces.

WEIMAR, SAXE (in German, *Sachsen-Weimar*); a sovereign grand-duchy of Germany, lying on the south of the Prussian government of Erfurt, and bordering on Gotha. It is composed of two parts or provinces, separated from each other—the principality of Weimar, and the principality of Eisenach, with a population of 226,628 souls, on 1400 square miles. The province of Weimar comprehends the duchies of Weimar and Jena, with a part of the principality of Altenburg, the chief part of the circle of Neustadt, and the petty districts of Ilmenau, Oldisleben, and Alstadt, which lie scattered in Thuringia. The province of Eisenach lies on the west side of Gotha, and to the east of Hesse-Cassel. (See *Eisenach.*) The surface of the province of Weimar is agreeably diversified; the soil fertile, producing corn sufficient for consumption; and it has good pastures, which feed numerous flocks of sheep; but large cattle are less attended to. The province of Eisenach is more mountainous and less fertile. The revenue is about £180,000. The government is a limited monarchy, administered by the grand-duke, with a representative constitution, granted by the duke May 5, 1816, which established a diet composed of deputies from the nobles, citizens and peasants, and guarantied the freedom of the press. The grand-duke of Saxe-Weimar-Eisenach has the twelfth vote in the German diet, in conjunction with the other princes of the Ernestine line (see *Saxons*), and one vote by himself in the plenum. The grand-duchy has one university, that of Jena, with (in 1829) 619 students, two gymnasia, and numerous inferior institutions for education. The religion is Lutheran.

WEIMAR; capital of the grand duchy, on the Ilm; 94 miles west of Dresden; lon. 11° 21' E.; lat. 50° 59' N.; population, 9917. It is situated in a pleasant valley, with a woody mountain to the north, and hills of little elevation to the south and east, while the river winds along the south side of the town. The prospect is agreeable, particularly in summer, when the gardens surrounding the town appear to encircle it with foliage. The houses are built in a plain and somewhat antique style. The grand ducal residence is a large castle, finely situated to the east of the town, with a park extending to the banks of the Ilm, and open to the public. The Belvidere, another residence of the reigning family, is situated on a delightful eminence to the south. The town contains two Lutheran churches, a work-house, an hospital, a gymnasium, a seminary for school-masters, an academy for drawing, painting and sculpture, a theatre, erected in 1825, an extensive institution connected with the study of geography and statistics, and a public library of upwards of 130,000 volumes. Weimar is a town of literary celebrity, and long held the same rank in Germany, for literature, as Dresden has for the fine arts; and, owing to the liberal patronage of the court, a number of the best writers of the last and present age have either been educated or residents here. In the early years of the present century, there were residing here more than twenty writers of note, among whom were Schiller, Göthe, Herder, Wieland and Kotzebue; the last of whom was a native.

WEIMAR, Anna Amalia, duchess of Saxe. See *Amalia*.

WEIMAR, Charles Augustus, grand duke of Saxe, born in 1756, and died in 1828, may well boast of having done great things in a little state. He was educated by his mother Amalia, who first collected the lights of learning in the little court of Weimar. The young prince was carefully instructed by able men, among whom was Wieland, and, after travelling in France and Switzerland, assumed the reins of government in 1775. During his reign of fifty-three years, he was not only the father of his people, but the patron of learning and the arts. Göthe, Herder, Wieland, Schiller, von Voigt, von Einsiedel, von Knebel, Musäus, and others, were among the ornaments of his court; and the university of Jena experienced his patronage. In 1816, he granted his people a representative constitution. The jubilee of his accession to the government was celebrated, in 1825, with delight by his grateful subjects.—He was succeeded by his son *Charles Frederic*, born in 1783, who married a sister of Alexander, emperor of Russia.—His second son, *Charles Bernard*, born in 1792, is major-general in the service of the king of Netherlands.

WEIMAR, Bernard, duke of. See *Bernard*.

WEINSBERG; a town in the circle of the Neckar, in Würtemberg, on the Sulm, with 1720 inhabitants. The ruins of the castle of Weibertreu (Wives-faith) recall to mind its siege, in 1140, when the emperor Conrad III. granted free egress to the women only, who were allowed to carry off the best of their possessions on their back. The women came out, each carrying her husband on her back. The emperor pardoned the men. See *Guelphs*.

WEISHAUPT, Adam, born at Ingolstadt, in 1748, studied at the same place, became, in 1772, *professor extraordinarius* of law, and, in 1775, professor of natural and canon law. As the professorship of canon law had, until then, always been given to ordained clergymen, the clergy attacked him, particularly as he, though a pupil of the Jesuits, avowed himself their bitterest enemy, after the abolition of their order. He now formed a connexion with several able men, and strove to gain them over to his system of cosmopolitism; but, as he went to work openly, the public authorities could not be made to believe that his designs were dangerous. The Jesuits, therefore, attacked him the more bitterly in private. As a jurist, he obtained much fame: his lectures attracted students belonging to all the faculties; and he made use of this opportunity to propagate his cosmopolitism, and for this purpose founded the order of *Illuminati*, which afterwards became so famous. Weishaupt lost his professorship, in 1785, in consequence of the persecutions of the Catholic clergy and his own imprudence, and went to Gotha, where he published several works—1. Complete History of the Persecution of the Illuminati in Bavaria; 2. System of the Illuminati; 3. Description of the Illuminati; 4. Pythagoras, or Considerations on the Secret Art of Ruling; 5. Materials for the Advancement of the Knowledge of the World and of Men.

WEISSE, Christian Felix, a writer who has done much for the improvement of children, was born Feb. 8, 1726, at Annaberg, in the Saxon Erzgebirge. He went, in 1745, to the university of Leipsic, where he studied philology. There he became acquainted with Klopstock, Cramer, the Schlegels, and others. With Lessing he formed an intimate friendship, and wrote, in connexion with him, for the German theatre. In 1759, he went, as tutor of a young count, to Paris. He afterwards produced songs and other poems, plays, &c., and, in 1760, his Library of Polite Learning and the Fine Arts. In 1762, he was appointed tax-gatherer, which office he held till his death. After 1774, he ceased to write for the stage, and chiefly turned his attention to works for children. His Songs for Children, and his A B C Book were received with great applause. In 1775, he began his Children's Friend, which, within six years, went through five editions; and there are few Germans whose youth has not been delighted and improved by this book. His Correspondence of the Family of the Children's Friend was a continuation of this. He died in 1804. He has described himself with much candour in his Autobiography, edited by E. C. Weisse and S. G. Frisch (Leipsic, 1806).

WELD. See *Wold*.

WELDING is the intimate union produced between the surfaces of two malleable metals, when heated almost to fusion and hammered. This union is so strong that when two bars of metal are properly welded, the place of junction is as strong, relatively to its thickness, as any other part of the bar. Only two of the old metals are capable of firm union by welding, namely, platina and iron. The same property belongs to the newly-discovered metals potassium and sodium. To weld bar iron to another piece of iron requires a heat equal to 8·877 Fahr.

Welding Heat, in smithery; a degree of heat given to iron, &c., sufficient to make any two bars or pieces of iron unite by a few strokes of the hammer, and form one piece.

WELL, in naval affairs; an apartment formed in the middle of a ship's hold, to enclose the pumps from the bottom to the lower deck. Its use is to defend the pumps from damage, and prevent the entrance of ballast, &c., which would otherwise choke the tubes in a short time, and render the pumps incapable of service. By means of this enclosure, the artificers may, likewise, more readily descend into the hold to examine or repair the pumps, as occasion requires.

WELLAND CANAL. See *Canal.*

WELLS: a city of England, in Somersetshire, nineteen miles south-west of Bath, 120 west by south of London. United with Bath, it forms a bishop's see. It is situated in a diversified and picturesque country, having fertile and extensive meadows to the south, east and west. It is small, compact, generally well built, and contains one of the most magnificent cathedrals in England (381 feet long, 131 broad, with a quadrangular tower 178 feet high). It receives its name from a remarkable spring, called *St Andrew's well* (vulgarly *bottomless well*). Population in 1831, 6649.

WELSER; an old patrician family in Augsburg, now extinct. A *Julius Welser* is mentioned under the emperor Otho I., who was made a noble, in 959, on account of his services in the war against the Hungarians.—His son *Octavianus* settled in Augsburg; and from him sprung the family which became so famous.—*Bartholomew Welser* was privy counsellor of Charles V. and so wealthy that, with the family of the Fugger, he lent 1,200,000 florins to the emperor. With the consent of the emperor, he equipped, in 1528, three vessels in Spain, which sailed under the command of Ambrose Dalfinger, of Ulm, to America, and took possession of the province of Venezuela, which the emperor made over to Welser as a pledge. 480 Germans accompanied this expedition to Venezuela, in order to settle there; but their avarice is said to have involved them in quarrels with the natives, of whom they destroyed great numbers, and they were at length cut off themselves. The Welser family remained, nevertheless, twenty-six years in possession of Venezuela; but, after the death of Charles V. the Spaniards deprived them of it. During the same period, the Welsers, together with some merchants of Nuremberg, sent a vessel to the East Indies, in order to seek new channels of commerce. The journal of this journey of discovery is said to be still in existence.

The celebrated *Philippina Welser* was niece of the above-mentioned Welser, and daughter of his brother Francis. She had received an uncommonly good education, and was of great beauty, so that Ferdinand (whose father subsequently became the emperor Ferdinand I.) fell in love with her, in 1547, in Augsburg. She refused all the offers of the young duke (then but nineteen years old), except on condition of marriage. The ceremony was privately performed, in 1550, without the knowledge of his father, or his uncle Charles V. The archduke Ferdinand was much incensed when he heard of it, and, for a long time, refused to see his son. In foreign countries, this *mesalliance* also excited much attention. It was not till after eight years that the father was reconciled. Philippina died, thirty years after the marriage, at Inspruck, in 1580. The archduke, her husband, honoured her memory by a medal, with the inscription *Divæ Philippinæ*. Of her two sons, the eldest, *Andrew*, became cardinal; the second, *Charles*, distinguished himself in the wars in Spain and Hungary, and died, in 1618, without leaving any children.

WEN; an encysted tumour. Encysted tumours are formed, in the midst of the cellular substance under the skin, of that which separates the muscles, or even of that which enters into the structure of the different organs. These tumours are comprehended in a membrane called a *cyst*. The causes of the formation are unknown, but a strongly-marked tendency to such swellings exists in particular individuals, which leads to the suspicion of constitutional causes. An encysted tumour, in its commencement, is always exceedingly small, and perfectly indolent; and it is often many years before it attains a considerable size. These swellings are usually spherical, except when this form is altered by the disposition of the surrounding parts. Practitioners are not acquainted with any effectual means of stopping the growth of them. The best mode of treatment is amputation of the whole swelling.

WENCESLAUS (*Wenzel*), emperor of Germany (frequently called only *king* of the Germans, because he was not crowned in Rome), and king of Bohemia, of the house of Luxemburg, eldest son of Charles IV., was born in 1361. The lawless state of Germany, at that period, might have bid defiance to the talents and spirit of the greatest ruler; how much more to a Wenceslaus! At the age of two years, he was crowned king of Bohemia. When six years old, he infeoffed a duke, who kneeled before him, at the command of his father. At the age of ten years, he was married. Two years later, he was invested with the mark of Brandenburg, and made to take part in state affairs; and he was hardly eighteen years old when he succeeded his father (in 1378) on the imperial throne. Of the admonitions which his father gave him shortly before his death, he disregarded the most important—"Keep the pope, the priesthood and the Germans your friends." Pride and cruelty were the predominant traits of his character; and his inclinations led him to low sensuality. Perhaps his conduct may be in part attributed to the consequences of an attempt to poison him, which was followed by a disease of the liver, attended with a burning thirst. Two circumstances rendered his situation particularly difficult. In the beginning of his reign, the schism in the church became peculiarly glaring, in consequence of the election of two popes, and had the most injurious influence on political affairs. The abominable *jus manuarium*, or right of private war, was universal in Germany, owing to the want of civil order, and of an energetic administration. Private leagues were formed to procure that redress of wrongs which the laws could not afford; and a confederation of the wealthy and powerful cities in Suabia and on the Rhine, opposed the jealous, arrogant and tyrannical nobility and princes, who, in various parts of Germany, also formed alliances. Wenceslaus, in the midst of his revelry and debauchery, looked supinely on the disorders of the empire, and seems to have secretly encouraged the great league of the cities, in order to weaken the power of the princes. At length the fear of seeing the royal authority almost annihilated by these leagues, induced him to endeavour to counteract them. In 1387, a violent war broke out between the confederated cities on one side, and the princes, counts, and lords on the other, in which the cities were obliged to yield, after the battle of Döffingen. Wenceslaus remained at Prague; and it is said that he answered the deputies, who invited him to come to Germany to restore peace, in terms to the following effect: "I do not know that I am bound to reconcile the estates, as I did not cause their quarrels; and I fear the fate of the wolf, in the fable, who attempted to reconcile two quarrelling lambs." At all events, he acted according to this principle. The defeats suffered by the cities obliged them to remain quiet, and Wenceslaus willingly fulfilled the wish of the members of the empire, to extinguish by force, all debts due to Jews, for which all debtors were obliged to pay fifteen per cent. of the debts to the emperor, who was the legal protector of the Jews! In Bohemia, Wenceslaus was disliked on account of his preference of the Germans, and his arbitrary spirit. He alienated the nobility by exacting the restorations of the crown domains, which had been mortgaged to them, and excited general odium on account of the cruelty with which he acted in his disputes with the clergy. His brother, the king of Hungary, and his cousin, the margrave of Moravia, were hostile to him; and thus originated, in 1394, a conspiracy of the Bohemian nobles, who surprised him, and kept him prisoner. After some months he was released; but his authority was gone in Germany. He was accused of having made John Galeazzo Visconti duke of Milan for money, and thus diminished the territory of the empire. Dissensions broke out every where; and the part which circumstances compelled him to take in ecclesiastical affairs, contributed much to deprive him of the German crown. He united with France, to induce the Popes, elected in Rome and Avignon, to resign, and to re-establish peace in the church, by a new election; and he undertook, particularly, to induce Boniface to resign; but this pope had been recognised by most of the electors, and they were dissatisfied with the measures of Wenceslaus, particularly the archbishop of Mayence, who owed his elevation to this pope. At last the electors resolved to deprive him of the crown, but disagreed respecting who should succeed him; so that, in 1400, the electors of Mayence, Treves, Cologne, and the Palatinate, only, pronounced his deposition. Wenceslaus remained inactive, but, nevertheless, found several supporters, because most of the members of the empire were dissatisfied with the steps of those electors. His successor, Robert, could do as little to remedy the deep-rooted evils of the empire as Wenceslaus. The latter quarrelled again with his brother Sigismund, who took him prisoner, and kept him a year and a half in Vienna. Robert died in 1410, and Sigismund, to whom Wenceslaus resigned his claims, was elected emperor. He remained in possession of Bohemia, and was only disturbed by the commotions caused by Huss. He died of apoplexy, in 1419, upon hearing of the insurrection of the Hussites, after the execution of Huss, whom he had endeavoured to protect. Modern historians have attempted to find apologies for his conduct. Certainly all is not true which was said of him in his time, but his faults deprive him of all esteem.

WENDS; the name given by the Germans to a particular branch of that great Sclavonic family, the settlements of which in the northern and eastern part of Germany, from the Elbe along the Baltic to the Vistula, and, towards the south, as far as Bohemia, were known as early as the sixth century. It included, 1. the Obotrites, in Mecklenburg, a powerful tribe, under their own kings. Henry the Lion, duke of Saxony, almost extirpated them in the twelfth century. 2. The Pomeranians and Wiltzians, from the Oder to the Vistula. Their princes united themselves with Germany in 1181, and did not become extinct until 1637. 3. The [illegible] (Frontier Wends; see *Ukraine*), and other tribes in the five Brandenburg marks. Albert the Bear, margrave of Brandenburg, conquered and extirpated them, not because they were heathens, but because they were Sclavonians. 4. The Sorbians (more properly *Serbians*), between the Saale and Elbe: ancient Misnia, therefore, was called by the Bohemians, *Srbsko*. 5. Lusitzians (improperly *Lusatians*), in the margraviate of Upper and Lower Lusatia. The Serbians had their own lords, princes and kings, and extended their dominion over the whole of the present Osterland, Misnia, the two Lusatias, Anhalt, the Electoral Circle, and the southern part of Brandenburg. In the tenth century, German colonists became intermingled with them. The mountains, particularly, became peopled with Germans, because the Sclavonians preferred the plains, as more adapted to agriculture; hence, even now, the villages in the mountains have German names, but almost all places in the plains, Sclavonic names. In Leipsic, the Servian language ceased to be spoken in 1327, though many Sclavonic words have been preserved in the country. From the mixture of the Sclavonians with the Franks and Saxons, the Upper Saxon idiom was formed since the tenth century. Many German names have evidently come from the Serbes; those which end in *itz*, *ik*, *nik*, *enz*, as Nostitz, Maltitz, Gablenz, Lessing (said to be originally Lesnjk). Of the Lusatians only, considerable remains have been preserved, owing to their long connexion with Bohemia, and the toleration which they experienced. The dialect of Upper Lusatia approaches to the Bohemian; the Lower Lusatian more to the Polish. In imitation of the German, it adopted the article and several other peculiarities, as did also the Sclavonians bordering on Germany, in Stiria, Carinthia and Carniola. Of the state of their language before their conversion to Christianity, we know little. Even after that event they remained subject to the severest oppression: no light penetrated to them. It was not till after the reformation that they began to write their dialect. During the thirty years' war (q. v.), it was contemplated to eradicate their language, and German ministers were given to them: sixteen parishes actually became German. It was not till the eighteenth century that they were left unmolested in the use of their own language. The orthography was settled in 1689, by a mixture of Bohemian and German. In 1716, a seminary, for the instruction of the Wends, was established in Leipsic, and, in 1749, one in Wittenberg. A Wendish seminary for Catholics was also established in Prague. There is a complete translation of the Bible, a grammar, and several other books, in their language; yet the decrease of the Wendish, in Lusatia, is very great. In Pomerania, the last person who spoke that language died in 1404. Only between the Elbe and Iretze, a remnant of Obotrites (called *Polabes*, from *Labe*, Elbe, and *po*, dwelling) maintained itself till recent times; and, in 1751, the last religious service in Wendish took place in Wustrow. These Wends existed, indeed, in the latter half of the last century; but the government laboured to destroy the peculiarities of language and customs by which they were distinguished from their German neighbours. The language was so ridiculed, that people became ashamed to speak it. Some customs and modes of dress still exist in many places, which remind us of the Wendish origin of their inhabitants, although German only is spoken there at present, as in Altenburg. The Wends were a warlike people, and waged war against the Germans, at different periods, from the seventh century, several times in connexion with the Bohemians, and, at a later period, with the Hungarians, until, in 934, Henry I. defeated them, at Merseburg, and Otho in 948. The German kings then erected the margraviates of Misnia, Northern Saxony and Lusatia, to keep these Sclavonians in obedience. The religious foundations at Misnia, Merseburg, Zeitz, and Magdeburg, were also established, partly with a view to propagate the Christian religion among the Wends. They were driven from their towns to the villages; the prisoners of war were given to chapters, convents, and noblemen, as villeins. All possible means were used to make the Wends adopt the Christian religion, and to blend them into one people with the Germans. In 1047, Gottschalk established a Wendish or Obotritish kingdom, consisting of eighteen provinces, under the Saxon dukes and the German kings, and strove to introduce German civilization, but, for that reason, was murdered in 1066. His son Henry re-established the kingdom in 1105, which, at a later period, Knud, duke of Sleswic, received as a fief, after whose death it was broken up. The introduction of Christianity among the Wends was gradually effected, though traces of heathen worship long remained. The Wends of Lusatia at present occupy a tract extending from Löbau to the mark of Brandenburg. They are industrious, but, in consequence of their former oppression, suspicious and reserved. Their language enables them to make themselves understood by the Poles and Russians. In Leipsic, there is a society in which students from Lusatia practise preaching in Wendish. It is a curious fact, that only about three miles from Berlin there is a village called Rixdorf, inhabited by Wends, many of whom, though in constant intercourse with Germans, and going daily to the market of Berlin to sell their produce, nevertheless, were wholly ignorant of the German language until lately, when their unwillingness to intermarry with Germans has given way to more rational notions.

WENTWORTH. See *Strafford.*

WERF, ADRIAN VAN DER, a Dutch painter, born near Rotterdam, in 1659, of poor parents, was first instructed in his art by Piccolett, a portrait painter, and afterwards became a pupil of Van der Neer. Having settled at Rotterdam, he obtained great reputation as a painter of portraits, and executed a piece for Steen, a rich merchant of Amsterdam, which procured him the patronage of the elector palatine. That prince, having visited Holland with his family in 1696, went to Rotterdam, and ordered Van der Werf to paint for him the Judgment of Solomon, and his portrait. The artist took the pictures to Düsseldorf when they were finished; and the elector wished to retain him in his service, but he only engaged himself for six months in the year, receiving a handsome pension. In 1703, he went to present to his patron his Christ carried to the Sepulchre, which is regarded as his best production. He was honoured with knighthood by the elector, who treated him with great liberality, augmenting his pension, and bestowing on him many marks of his esteem. He died at Rotterdam, Nov. 12, 1722. Van der Werf was particularly noted for his small historical pieces, which are most exquisitely finished, and which are still in high request, though his reputation is not quite equal to what it was during his life.—His brother and pupil, *Peter van der Werf*, painted portraits and conversation pieces, and was a very able artist. He died in 1718, aged fifty-five.

WERNER, ABRAHAM GOTTLOB; a celebrated mineralogist, born in Germany, Sept. 25, 1750. His father was overseer of iron works in Upper Lusatia; and the son being intended for the same employment, was sent, after some previous education at school, to the mineralogical academy at Freyberg. Thence he removed to Leipsic, where he applied himself to natural history and jurisprudence, but more especially to the former, which he found the most attractive. The external characters of mineral bodies attracted much of his attention; and, in 1774, he published a work on that subject, considered as the basis of his oryctognostic or mineralogical system. It has been translated into various languages, and adopted and commented on by other writers; but the author could never be persuaded to publish a new and enlarged edition. Soon after this publication, Werner was invited to become keeper of the cabinet of natural history at Freyberg, and to deliver lectures on mineralogy. In 1780, he published the first part of a translation of Cronstadt's Mineralogy; and, in his annotations on this work, he gave the first sketch of his mineralogical system, and published many descriptions in conformity with the methods proposed in his treatise on external characters. In 1791, appeared his Catalogue of the mineral Collection of Pabst von Obain. Besides his lectures on mineralogy, he also delivered lectures on the art of mining, which he rendered peculiarly intelligible and interesting by his simplification of the machinery, and by drawings and figures. His system of geognosy, or geology, was unfolded only in his lectures; but these he caused to be written out by his approved pupils, and revising them himself, he communicated authority to their manuscripts. Many parts of these lectures have been published in different countries. Werner himself likewise published some mineralogical papers in the Miner's Journal; and, in 1791, appeared his New Theory of the Formation of Metallic Veins, which was translated both into French and English. He was nominated counsellor of the mines of Saxony in 1792, and had a great share in the direction of the academy of mineralogy, and in the administration of public works. The cabinet of minerals which he had collected was unrivalled for its completeness and arrangement, consisting of one hundred thousand specimens. This he sold to the mineralogical academy, for about £6 reserving the interest of £5175 as an annuity to himself and his sister, who had no children, and at her death to revert to the academy of Freyberg. He died, unmarried, in August, 1817. A knowledge of the Wernerian mineralogy was first introduced into England by Kirwan; but a more complete view of it is exhibited in professor Jameson's System of Mineralogy, 1804, second edition, 181 As a geologist, Werner is scarcely entitled to the merit of originality, as his geognosy consisted more in the invention of a new language adapted to support a theory, than in the exhibition of novel facts or the discovery of a new and practical method of investigation. (See *Geology.*) But the science of mineralogy is highly indebted to his labours; and in having given a definite and systematic arrangement of mineral bodies, showing their characteristic analogies, he has done that for the branch of natural knowledge he cultivated, which Linnæus did for the science of botany, and thus attached a permanent celebrity to his name. See *Mineralogy.*

WESEL; a fortified town in the government Cleves, in the Prussian dominions on the Rhine, the entrance of the Lippe into that river, fifteen miles north-west of Gueldres, seventeen east-south-east of Cleves; lon. 6° 37′ E.; lat. 51° 29′ N.; population, including the garrison, 12,000. It is strongly fortified, was once a Hanseatic town, and has considerable commerce, navigation and manufactures, particularly of spirituous liquors. It contains a gymnasium, a theatre, four parish churches, &c.

WESER, one of the large rivers of Germany, originates from the union of the Werra (the source of which is in Hildburghausen) and the Fulda, which rises in the grand duchy of Fulda. At Münden, in Hanover, they unite, and are called *Weser*, which is believed to be only a contraction of the original name of the Werra (*Wisaraha*, *Wesara*, *Werraha*). The Weser passes through the Hanoverian principality of Göttingen, Brunswick, the principality of Calenberg, Schauenburg, the Prussian province of Westphalia, Hoya, Verden, Bremen, and the duchy of Oldenburg, and empties into the North sea, ten German or about forty-five English miles below Bremen, after having received several other rivers. The twenty-two tolls on the Weser are extremely harassing and injurious to internal commerce. One single toll, that of Elsfleth, which at present is abolished, produced annually 80—100,000 German dollars. The history of the exactions and injustice connected with the tolls of one such river would show how little regard has been paid to the interest of the people. In 1817, a project was formed for uniting the Weser and the Elbe. The most important cities on the Weser are Münden, Hameln, Rinteln, Minden, Nienburg and Bremen.

WESLEY, JOHN, the second son of Samuel Wesley, rector of Epworth, was born at Epworth, June 17, 1703. He received his school education at the Charter-house, whence he was removed to Christ-church college, Oxford. After taking his first degree, he was, in 1724, elected fellow of Lincoln college, and, in 1726, graduated master of arts. At this time, he was distinguished for his classical attainments, skill in dialectics, and talent in poetry. Soon after he was elected fellow, he was appointed Greek lecturer, and took pupils; and, in 1725, he was ordained by bishop Potter. For some time after his residence at Oxford, he was only distinguished as a grave, sedate young man; but after a while, the perusal of some devotional tracts, and more especially Law's Serious Call, induced him to consecrate himself more entirely to what he deemed the essentials of a holy life. In 1729, he associated with some friends of similar disposition, who met and read together the classics on week-days, and divinity on Sundays; but shortly after, their meetings became exclusively religious. This society consisted of fifteen members, who, from the strictness of their manners and deportment, were variously designated by the other students, but more especially obtained the name of *Methodists*, which appellation they themselves sanctioned and retained. (See *Methodists*.) His father wished him to make interest for the next presentation of his living of Epworth; but he was too much attached to Oxford, and the manner in which he was engaged, to listen to his wishes. A mission to Georgia had soon after greater attractions, and, in 1735, he accepted the invitation of doctor Burton, one of the trustees for that newly founded colony, to go over and preach to the Indians. He accordingly embarked the same year, in company with his brother Charles, two other missionaries, and several German Moravians. The disturbed state of the colony prevented all preaching to the Indians; and, although the colonists of Savannah were at first attentive to the ministry of Mr Wesley, his notions were too high church for his hearers. He refused the Lord's supper to dissenters, unless they would be rebaptized, insisted upon immersion in the rite of baptism, and, by a variety of ascetical practices, excited an unfavourable opinion of his judgment. What most injured his reputation, however, was his conduct towards a young lady, whom it was expected he would marry, and whom he refused to admit to communion after her marriage with another person, without deigning to assign any reason. Legal proceedings were in consequence commenced against him, previous to the conclusion of which, after a consultation with his friends, he became convinced that "God called him to return to England;" on which he gave public notice of his intention to depart, and left Georgia after an abode of a year and nine months. On his arrival from America, he discovered that he, who had been voyaging to convert others, had never been converted himself; and he felt, as he observed, "a want of the victorious faith of more experienced Christians." This conviction appears to have been strengthened by a German Moravian missionary, with whom he much communed, until at length, a sudden conversion occurred, by his own account, on the twenty-fourth of May, 1738, at a quarter before nine in the evening, while a person in a society in Aldersgate street was reading Luther's preface to the Epistle to the Romans. To strengthen his faith, he went over to Germany, and proceeded to Herrnhut. (q. v.) He returned in September, 1738, when he commenced the systematic labours which made him the founder of the great religious body of Methodists. He began to exhort and to preach, often three or four times a day, at the prisons and other places, in the metropolis, and made frequent excursions into the country, where his followers became rapidly very numerous. His discourses were often attended with demonstrations of the effect produced on the hearers, such as swoonings, outcries, convulsions, and similar results of violent internal emotion and excitement. He soon after accepted the invitation of Whitefield, who had sometime before commenced the practice of field preaching, to join him at Bristol; and, in May, 1739, the first stone of a Methodist meeting-house was laid in that city. Some difficulties, which arose as to the liability of the feoffees, nominated, in the first instance, to the expenses of erection, by inducing Mr Wesley to take it all into his own hands, laid the foundation of the unlimited powers which he obtained over his followers. Whatever chapels were subsequently built by the connexion, were all either vested in him or in trustees bound to give admission to the pulpit as he should direct. It is thought that his original plan was to form a union of clergymen in order to further his scheme of conversion by their joint efforts; but the dislike of ministers of the establishment to join in it, reduced him to the necessity of appointing lay preachers, and employing them as itinerants among the different societies of the persuasion. At the same time, he assumed the power of nominating those preachers, and thus, as the societies increased, his authority received indefinite augmentation. The opinions of Wesley, being derived from the Arminian theology, differed materially from those of Whitefield on the points of unconditional election, irresistible grace, and final perseverance; in consequence of which a coldness grew up between them, and a lasting separation between the societies over which they presided. Nothing so much favoured the progress of Wesleyan Methodism, as the strict and orderly discipline established by the founder, commencing from the small division of classes, and ending in the annual conferences of the numerous preachers. The whole was very wisely calculated to bind the society to each other. The society, in its infant state, had to contend with much popular hatred, sometimes fomented by persons in the upper ranks of society. The followers of both Whitefield and Wesley were, in the first instance, chiefly among the uneducated classes. In 1749, he married a widow of good fortune, which was, however, all settled upon herself; but the union was an unhappy one, and terminated in a final separation, in 1781. On the breaking out of the American disputes, he wrote a pamphlet on the side of government, entitled a Calm Address to the American Colonies, which produced a considerable effect among his own followers. When the contest terminated in separation, he took a step which appeared a renunciation of the principles of the Episcopal church, by ordaining preachers for America, by imposition of hands, and consecrating a bishop for the Methodist Episcopal church. By this step he offended many of the society, and especially his brother Charles; and it is asserted that he himself repented it, as likely to further that separation from the church, which, after his death, virtually took place. The approach of old age did not in the least abate the zeal and diligence of this extraordinary person, who was almost perpetually travelling, and whose religious services, setting aside his literary and controversial labours, were almost beyond calculation. Besides his numerous exhortations, he generally preached two sermons every day, and not unfrequently four or five, all which he was enabled to effect by very early rising and the strictest punctuality. His labours were continued to within a week of his death, which took place March 2, 1791, in the eighty-eighth year of his age. John Wesley had a countenance wherein mildness and gravity were very pleasingly blended, and which, in old age, appeared extremely venerable. In manners, he was social, polite and conversible, without any gloom or austerity. In the pulpit, he was fluent, clear, and argumentative; often amusing, but never aiming at, or reaching, like Whitefield, the eloquence of passion. His style in writing was of a similar description, and he seldom appeared heated, even in controversy. The works of John Wesley, on various subjects of divinity, ecclesiastical history, sermons, biography, &c., amounted, even in 1774, to thirty-two volumes, octavo. In addition to the accounts of Wesley by Hampton, Whitehead, and Southey, there is a more recent life of him by Henry Moore.

WESLEY, Charles, younger brother of the above, was born at Epworth, Dec. 18, 1708, educated at Westminster school and Christ-church, Oxford, where he graduated master of arts in 1732, accompanied his brother to Georgia, and also became a preacher in the Methodist connexion, for which he wrote hymns, now sung in their chapels. Some of his sermons have been printed; and his poetical compositions exceeded those of his brother, from whom he differed on various points. His son, *Charles*, born in 1757, displayed, even in infancy, an astonishing genius for music. At the age of two years and three quarters, he astonished his father, by playing readily, and in correct time, a tune upon the harpsichord; with which instrument his mother, almost from his birth, had been accustomed to quiet and amuse him. It is a curious circumstance that he would never suffer her to play with one hand, but, even before he could speak, would place her other hand on the keys, to complete the harmony of the piece, by the addition of the bass. From the earliest moment of his performances, he always added a true bass to every tune which he played. At the age of twelve or thirteen, it was thought that no person could excel him in playing the works of Corelli, Scarlatti, and Handel, to the study of which he had almost wholly confined himself for some years. He then visited London, and received instructions in composition from doctor Boyce; and under the inspection of that gentleman he published his first production, a Set of Six Concertos for the Organ or Harpsichord. He afterwards ranked among the first musical professors of England

WESSELING, Peter, born at Steinfurt, 1692, an eminent critic, presided over the gymnasium of Middleburg, was afterwards a professor in the university of Franecker, and, at length, occupied the chair of eloquence at Utrecht. Besides other works, he published *Observationum variarum Libri duo* (Amst., 1727, 8vo.); *Probabilium Liber singularis* (Franecker, 1731, 8vo.); *Antonini Itinerarium* (Amst., 1735, 4to.); *Dissertatio Herodotea* (Utrecht, 1758, 8vo.); and a valuable edition of Herodotus, with annotations (Amst., 1763, folio.) He died at Utrecht, in the year 1764.

WESSEX, that is, **WEST SAXONY**; one of the most important of the kingdoms of the Saxon heptarchy in England, during the sixth, seventh, and eighth centuries. Egbert, king of Wessex, founded the kingdom of England, by the union of the other kingdoms of the heptarchy. See *Egbert* and *England*.

WEST, Benjamin, was descended from a respectable English family, belonging to the denomination of Quakers, who had emigrated to America in 1667. His father, John West, was a merchant settled at Springfield, in Pennsylvania, where Benjamin was born, Oct. 10, 1738, being the tenth chi In his seventh year, he gave the first indications of h propensity for the pencil. As he was watching th sleeping infant of his elder sister, it smiled, an struck with its beauty, he sought some paper, a drew its portrait in red and black ink. The circum stances, however, in which he was placed, afford him little aid in the development of his talent There were neither professors, paintings, nor pri among the primitive settlers of Pennsylvania. F some time, he pursued his favourite employme with red and yellow colours, (which he learned prepare from some Indians who had roamed Springfield), and indigo, given to him by his moth together with brushes made of the hair of a c At length, a merchant named Pennington, who w his cousin, having seen his sketches, sent him a b of paints and pencils, with canvass prepared for t easel, and six engravings. The possession of t treasure almost prevented him from sleeping. made all the necessary arrangements in the garr where he commenced his labours with the da every morning, absenting himself entirely fr school, until the inquiries of his master caused search and discovery to be made. His moth found him in his *studio*; but her inclination to ger soon subsided on beholding his performan Instead of copying servilely, as might have be expected, he had composed a picture from two of the engravings, telling a new story, and coloured with a skill and effect which, in her eyes, were surprising. She kissed him with rapture, and procured his pardon from her husband and his teacher. Mr Galt, in his life of West, says that, sixty-seven years afterwards, he had the gratification to see this piece in the same room with the sublime picture of Christ Rejected; on which occasion the painter declared to him, that there were inventive touches, in his first and juvenile essay, which, with all his subsequent knowledge and experience, he had not been able to surpass. By degrees, the report that a boy, remarkable for his talent for painting, lived at Springfield, began to extend, until it reached the ears of Mr Flower, a justice of Chester, who, having looked at his works, obtained leave from his parents to take him, for a few weeks to his house. Whilst residing with this gentleman, he derived great advantage from the conversation of the governess of his daughters, a young English lady, well acquainted with art, and with the Greek and Latin poets, and who loved to point out to the young artist the most picturesque passages. During his residence there, he painted the portrait of the wife of a lawyer of the neighbouring town of Lancaster, the sight of which made people come in crowds to sit to him for their likenesses. He likewise executed a painting of the death of Socrates, for a gunsmith of Lancaster, who had a classical turn. On his return to Springfield, his future career became the subject of anxious consideration; and, finally, the matter was submitted, by his parents, to the wisdom of the society to which they belonged. A deliberation was accordingly held, the result of which was, that, though the Quakers refuse to recognise the utility of painting to mankind, they allowed the youth to follow the vocation for which he was so plainly destined. Soon afterwards, however, he took a step utterly at variance with the principles of the sect; but, strange as it may seem, he received neither admonition or remonstrance. This was to join the troops under general Forbes, who proceeded in search of the relics of the army of general Braddock. He was called home in a short time, by intelligence of the illness of his mother, and arrived only in time to receive the welcome of her eyes and her mute blessing. This was a severe blow, for he was devotedly attached to her. In his eighteenth year, he removed to Philadelphia, where he established himself as a portrait painter. His success was considerable; and, after painting the heads of all who desired it in that city, he repaired to New York, where his profits, were, also, not insignificant. In 1760, by the kindness of some friends, he was enabled to proceed to Italy; and, July 10, of that year, he reached Rome. There he obtained access to some of the most distinguished personages, and first made himself known as an artist by a portrait of Lord Grantham, which was attributed, for a time, to Mengs. After recovering from an illness of eleven months' duration, he visited the different cities of Italy for the purpose of inspecting the works of the great masters scattered through [illegible]. After his return to Rome, he painted a pic[illegible] of Cimon and Iphigenia, and another of An[illegible] and Medora, which increased his reputation, [illegible] opened the way to those marks of academic [illegible]tion usually bestowed on fortunate artists. [illegible] elected a member of the academies of Par[illegible] Florence, and Bologna, to the former of which he presented a copy of the St Jerome of Correggio, of great excellence. In 1763, he went to London, intending to proceed to his native country; but, finding that there was a great probability of his success as a historical painter in that metropolis, he established himself there. His rise was rapid. He was introduced to the king, George III., whom he ever found a steady friend and munificent patron, and by whom, on his first presentation, he was directed to paint the picture of the departure of Regulus from Rome. Lord Rockingham made him an offer of a permanent engagement, with a salary of £700 a year, to embellish, with historical paintings, his mansion in Yorkshire; but he preferred depending on the public. He continued to be the king's painter until the monarch became superannuated, executing numerous works on historical and religious subjects, besides a few portraits. On the death of Sir Joshua Reynolds, he had been elected president of the royal academy, and took his place, March 24, 1792. He delivered an address on the occasion, which was much applauded. When George III. was first seized with the mental malady which incapacitated him for the duties of government, West was engaged in executing various religious pictures for the chapel at Windsor; but when that event occurred, he was informed that his labours must be suspended until further orders. On the recovery of the king, he was directed to go on with the works; but, on the recurrence of his illness, he was again ordered to suspend them. The story of his dismissal from court was spread abroad, with many aggravations, by the malevolence of enemies whom his success had created; and injurious statements were circulated respecting the sums which he had received for his pictures. In consequence, he published an account of what he had obtained, which was no more than a just compensation for his labours. During the peace of Amiens, he went to Paris, for the purpose of beholding the splendid collection, which Napoleon had placed in the Louvre, of the masterpieces of art, and was treated, in that city, with the greatest distinction by the most prominent persons of the imperial court. Soon after his return to London, he retired from his seat as president of the royal academy, where he had to encounter an opposition strong in numbers and ability; but, in a short time, he was restored to it by an almost unanimous vote, there being but one dissenting voice. In his sixty-fifth year, he painted the celebrated picture of Christ healing the sick, for the Quakers of Philadelphia, to aid them in the erection of an hospital in that town. It was exhibited in London, where the rush to see it was very great, and the opinion of its excellence so high that he was offered 3000 guineas for it by the British institution. As he was far from being rich, he accepted the offer, but on condition that he should be allowed to make a copy, with alterations, for Philadelphia. He did so; and the work is still exhibited in that city, where the profits arising from it have enabled the committee of the hospital to enlarge the building and receive more patients. The success of this piece impressed him with the belief that his genius appeared to most advantage in pictures of large dimensions. "As old age," says Allan Cunningham, "benumbed his faculties, and began to freeze up the well-spring of original thought, the daring intrepidity of the man seemed but to grow and augment. Immense pictures, embracing topics which would have alarmed loftier spirits, came crowding thick on his fancy; and he was the only person who appeared insensible that such were too weighty for his handling." He painted several works of great size; but few were willing to be purchasers of pictures which occupied so much room. Domestic sorrow mingled with professional disappointment. His wife, with whom he had lived for some sixty years in uninterrupted happiness, died December 6, 1817. He did not survive her many years. Without any definite complaint, his mental faculties unimpaired, his cheerfulness uneclipsed, and with looks serene and benevolent, he expired March 11, 1820, in the eighty-second year of his age. He was buried beside Reynolds, Opie and Barry, in St Paul's cathedral.

West was in person above the middle size, of a fair complexion, and firmly and compactly built. He ever preserved a sedate sobriety of sentiment, and happy propriety of manners, the results of a devout domestic education. In disposition, he was mild, liberal, and generous. He seriously impaired his fortune by his kindness to young artists, whom he endeavoured to assist in every way. The advice which he gave them in his discourses from the president's chair was marked by good sense and affection. The following extract in relation to his paintings is from the biography of him, written by Allan Cunningham:—"As his life was long and laborious, his productions are very numerous. He painted and sketched upwards of 400 pictures, mostly of a historical and religious nature, and left more than 200 original drawings in his portfolio. His works were supposed, by himself, and for a time, by others, to be in the true spirit of the great masters; and he composed them with the serious ambition and hope of illustrating Scripture, and rendering gospel truth more impressive. No subject seemed to him too lofty for his pencil· he considered himself worthy to follow the sublimest flights of the prophets, and dared to limn the effulgence of God's glory, and the terrors of the day of judgment. In all his works the human form was exhibited in conformity to academic precepts; his figures were arranged with skill; the colouring was varied and harmonious: the eye rested pleased on the performance; and the artist seemed, to the ordinary spectator, to have done his task like one of the highest of the sons of genius. But below all this splendour, there was little of the true vitality; there was a monotony, too, of human character; the groupings were unlike the happy and careless combinations of nature; and the figures seemed distributed over the canvas by line and measure, like trees in a plantation. He wanted fire and imagination to be the true restorer of that grand style which bewildered Barry, and was talked of by Reynolds. Most of his works, cold, formal, bloodless and passionless, may remind the spectator of the sublime vision of the valley of dry bones, when the flesh and skin had come upon the skeletons, and before the breath of God had adorned them with life and feeling. Though such is the general impression which the works of West make, it cannot be denied that many are distinguished by great excellence. In his Death on the Pale Horse, and more particularly in the sketch of that picture, he has more than approached the masters and princes of the calling. It is, indeed, irresistibly fearful to see the triumphant march of the terrific phantom, and the dissolution of all that earth is proud of beneath his tread. War and peace, sorrow and joy,
youth, and age, all who love and all who hate,
planet-struck. The Death of Wolfe, too,
tural and noble, and the Indian Chief, like
Oneida warrior of Campbell, 'a Stoic of the w
a man without a tear,' was a happy thought.
Battle of La Hogue I have heard praised as
best historic picture of the British school, by
not likely to be mistaken, and who would not
what he did not feel. Many of his single fig
also, are of a high order. There is a natural g
in the looks of some of his women which few p
ers have ever excelled."—See Galt's *Life*
Studies of Benjamin West (London, 1816 and 18
and Cunningham's *Lives of Eminent British P*
ers.

WEST, GILBERT, an ingenious author, was
son of doctor West, editor of Pindar's works,
was born in the year 1706. He was sent to Ox
and afterwards obtained a commission in a ca
regiment. He did not, however, long remai
the service, retiring to Wickham, in Kent, w
he devoted his time to literary pursuits and the
joyment of the society of his friends. The pat
age of Mr Pitt obtained him, in 1751, the situ
of clerk to the privy council, he having previ
held a deputy's place nearly twenty years.
treasurership to Chelsea college was afterw
added through the same interest. On the dea
an only son, in 1755, his grief induced a para
affection, which carried him off in the follo
year. His Observations on the Resurrection
printed in 1747. His other writings are a poe
the Institution of the Order of the Garter, a
translation of some of the Odes of Pindar.

WEST INDIA APRICOT. See *Mam*
Tree.

WEST INDIES; the extensive archip
which lies between North and South Ame
stretching from the coast of Florida, in the tw
eighth degree, to the shores of Venezuela,
tenth degree, of north latitude. It is divided by
graphers into the Bahamas, composed of fo
clusters of islands and 700 keys; the Great A
comprising the four largest islands of the g
Cuba, Hayti, Porto Rico and Jamaica; the L
Antilles, stretching from Trinidad, in a wes
direction, along the northern coast of South
rica; and the Caribbee islands, stretching,
great bow, from Tobago to Porto Rico, and
divided into the three groups known under the
of the Virgin islands, the Leeward islands a
Windward islands. Each of the divisions above
tioned, and the most important individual
have been described separately. The whole
pelago, with the exception of some of the Bah
lies within the torrid zone. The name *Indi*
given to them by Columbus, who first disco
them, under the notion that they formed pa
India, which was the object of his search.
the mistake was discovered, they retained the
with the prefix *West*, to denote their geogra
position. (See *America*, and *Columbus*.)
seasons, as in other tropical countries, are di
between the wet and the dry; the spring b
with May, when the foliage and grass become
verdant: the first periodical rains set in abo
middle of the month, falling every day about
and creating a rapid and luxuriant vegetation
thermometer at this season varies considerabl
its medium height is about 75°. After these
have prevailed about a fortnight, the weathe
comes dry and settled, and the tropical su

reigns in full glory. The heat at this time is tempered by sea breezes, the thermometer standing, on an average, at about 80°. The nights are now eminently beautiful: the moon is so brilliant that the smallest print is legible by her light; and, in her absence, her place is supplied by the brightness of the Milky Way, and the radiance of the planet Venus, which is such as to cast a shade. In the middle of August, the heat becomes excessive, and the refreshing sea breezes almost entirely intermit. This state of the atmosphere is succeeded by the autumnal rains, which become general in October, and pour down in cataracts. In the interval between August and October, the islands are visited by those tremendous hurricanes, which effect so much mischief. (See *Hurricanes.*) Towards the end of November, a change takes place: the weather becomes serene and pleasant, and northerly and north-easterly winds prevail, constituting the finest winter on the globe, from December to May. There are some exceptions to this general description, particularly in the large islands, which are often visited by refreshing land breezes from the interior highlands. (See the articles *Cuba*, *Hayti*, and *Jamaica.*) The islands abound generally in all tropical productions, as sugar, cotton, coffee, indigo, pimento, cocoa, medicinal drugs, tobacco, maize, guava, plantain, cacao, &c.; oranges, lemons, limes, pomegranates, citrons, pine-apples, &c.; manioc, yams, potatoes, &c. The mountains contain great varieties of trees, adapted for cabinet-work, ship-building, and other purposes in the arts, such as cedars, mahogany, lignum-vitæ, iron-wood, the Indian fig-tree, the calabash-tree, &c. The indigenous quadrupeds are the agouti (a sort of intermediate species between the rabbit and the rat), the peccary or Mexican hog, the armadillo, the opossum, the raccoon, the musk-rat, the alco or American dog, and several of the smaller varieties of monkey. Most of these species are now extinct in these islands. The iguana, a species of lizard, and the mountain crab, are also found here. The birds are remarkable for the brilliancy and beauty of their plumage: among them are the parrot, in many varieties, the scarlet flamingo, and the glittering humming-bird, with a great number of waterfowl of different kinds. Of the serpent tribe there are many varieties; but few, if any, are venomous: the alligator, and the brilliant and changeable gobemouche, or fly-catcher, are among the lizards.

The West Indies were discovered by Columbus, on his first voyage, in 1492: their subsequent history will be found under the separate articles. (See, also, *Buccaneers.*) The islands were inhabited, at the time of their discovery, by two distinct races of natives, the Caribs, occupying the Windward islands, and the Arrowauks, inhabiting Hayti, Cuba, Jamaica, Porto Rico, and the Bahamas. The former were warlike and fierce; the latter mild and peaceful, and much more advanced in civilization. (See *Caribbees.*) The languages of these nations were different.—See Edwards's *History of the British West Indies* (3 vols., 1807); T. Southey's *History of the West Indies* (3 vols., 1827); and the works of Humboldt.

The West India islands are, with the exception of Hayti, still in the possession of European powers. (See *Colony.*)

1. *Spanish West Indies.* Spain has not retained a foot of ground on the American continent. The remnants of her splendid colonial empire in the new world, are the island of Cuba, the largest and finest of the West India islands, Porto Rico, with several dependencies, and Passage, Serpent, and Bieque or Crab islands, among the Virgin islands. The Spanish part of St Domingo now forms part of the Haytian republic, and the islands of Margaritta, with Blanquilla, Tortuga, &c., belong to the republic of Venezuela.

2. *French West Indies.* Previously to the insurrection of 1792, St Domingo was the most valuable French colony in the West Indies; but that event resulted in the establishment of the independence of that island, under the name of Hayti. Having sold Louisiana to the United States, and ceded other colonies to the British, France now possesses only Guadaloupe and Martinique, with the small islands of Mariegalante and Deseada, in the West Indies.—See *Les Antilles Françaises, particulièrement Guadeloupe*, by Bover-Peyseleau (3 vols., Paris, 1823).

3. *Danish West Indies.* The Danes possess only the small islands of St Thomas, St Croix, or Santa Cruz, and St John, belonging to the Virgin islands.

4. *Swedish West Indies.* The Swedes possess only one colony, the small but fertile island of St Bartholomew.

5. *Dutch West Indies.* To the kingdom of the Netherlands belong the islands of Curaçoa, St Eustatius, Saba, and part of St Martin, with the smaller islands of Aruba, Aves, and Banaire. Curaçoa, formerly important as an entrepot, has lost a considerable portion of its trade since the South American revolution, as the goods intended for the continent are forwarded direct to their place of destination.

6. *British West Indies.* These are, Antigua, Barbadoes, Dominica, Grenada, Jamaica, Montserrat, Nevis, St Kitts, St Lucia, St Vincent, Tobago, Tortola, Anguilla, Trinidad, Bahamas, and Bermudas.

A great revolution has recently taken place in the whole economy of these islands, by the total abolition of slavery. In order to obtain the latest intelligence of the result of this great measure, we defer the subject to the Supplement.

WEST POINT; a village of New-York, and military post, on the west bank of the Hudson, where it passes through the Highlands, in the township of Cornwall, in Orange county, fifty-three miles, by water, above New-York, and one hundred below Albany. During the revolutionary war, this point was strongly fortified, and deemed one of the most important fortresses in America. The plain that forms the bank of the river is elevated 188 feet; and fort Putnam, a short distance in its rear, is 598 feet. Most of the former works are now in ruins. The *military academy* consists of the corps of engineers; of one professor and an assistant professor of natural and experimental philosophy; one professor and an assistant professor of mathematics; one professor and an assistant professor of the art of engineering, in all its branches; a chaplain and professor of ethics; a teacher of drawing; a surgeon; and a sword-master. The number of cadets is limited to 250.

WEST PRUSSIA; previous to 1772, called *Polish Prussia*, because it belonged to that part of Prussia which the crown of Poland had reserved, when it invested Albert of Brandenburg with the duchy of Prussia, in 1525. (See *Prussia.*) Dantzic, Thorn and Elbing were the principal towns of Polish Prussia. In 1772, Frederic II. took possession of it, (see *Poland*), with the exception of Dantzic and Thorn, which fell into his hands in 1793. By the peace of Tilsit, a part of it was ceded to France, and one portion of the ceded territory was annexed to the duchy of Warsaw, Dantzic being erected into a free city; but, in 1815, it was restored to Prussia by the congress of Vienna. It now constitutes a Prussian province, with a population of 792,207 souls, and is divided into the two governments of Dantzic and Marienwerder, with chief towns of the same name.

WESTERN EMPIRE. Theodosius the Great, the last sole sovereign of the whole Roman empire, shortly before his death, divided, by his will, that immense extent of territory between his sons, Arcadius and Honorius, neither of whom was then of age, the former being eighteen years old, and the latter only eleven. Arcadius was to possess the East (see *Byzantine empire*); his brother, the West; which comprehended Italy, Africa, Gaul, Spain, Britain, and half of Illyria. The empire, thus divided, was to be ruled in common, according to the direction of Theodosius, by the two brothers; but the reunion of both crowns upon one head was to remain lawful, for it had not escaped the penetrating mind of the emperor, that such a union could alone preserve the empire from ruin. At the death of Theodosius, January 11, 395, the guardians appointed for his sons entered upon their duties; the minister Rufinus, a Gaul, ruling for Arcadius, and the commander-in-chief, Stilicho, a Vandal, (by marriage, a nephew of the late emperor), for Honorius. Rufinus was soon overthrown by the superior power of the general, and the plans of the latter were afterwards frustrated by the artifices of the court of Constantinople. Stilicho, did, indeed, at the wish of Rufinus, divide the territories, the army, and the immense treasures left by the emperor; but he had no intention of yielding to him one half of the power of regent, as guardian to the young emperor of the East. The general had taken the command of the portion of the troops belonging to Arcadius, ostensibly to lead them to their proper commander, but in fact to secure to himself the command of all the forces of both portions of the empire. He had already reached Thessalonica, on the way to Constantinople, when Rufinus, dreading above all things his appearance in person, sent orders to him to halt, with the declaration that every step he took nearer the capital would be deemed an act of hostility. Stilicho was too prudent to disobey openly; but he was determined to remove out of his way a rival bold enough to oppose him, the general and deliverer of the imperial house. Gainas, a Goth, appointed by him general of the army of the East, received his orders; and Rufinus, in the presence of the army, already prepared for such an event, was assassinated on the field of Mars, before Constantinople, by an audacious soldier, under the eyes of the emperor Arcadius. But Stilicho was still farther than before from the object of his wishes. The sagacious courtier Eutropius, first chamberlain and principal favourite of Arcadius, and the empress Eudoxia, as remarkable for her talents as for her charms, were too pleased with the power which they exercised over the weak prince, to allow the general an influence which might become dangerous to the favourite. Arcadius himself might also prefer the mild sway of the courtier, and of his beautiful wife, to that of the stern and able soldier. The dependence of the troops, and of their general Gainas, was secured; and after every means had been tried to injure Stilicho in the public opinion, a decree of the senate of Constantinople was procured, declaring him an enemy of the state, and all his possessions within the limits of the East forfeited. Attempts were made upon his life, but without success. This hostility against the regent of the Roman dominions in the West, gave the first signal for a division of the empire; and the wise views of the prudent Theodosius failed through the passions of a few men, and the weakness of his two young sons, who were unable to restrain them. Stilicho might perhaps have opened the way to the palace of Arcadius with the sword; but the terrible image of a civil war restrained the ambition of a man who certainly could not be charged with want of boldness. He now devoted himself entirely to the interests of his pupil Honorius, and to the government of his dominions. After the rebellious governor of Africa, Gildo, had been conquered by his own brother, the Moorish prince Mascezel, who revenged upon the tyrant the murder of his two children, and when he had himself ended his campaign in Greece against the Goths, Stilicho married his daughter Maria to her cousin, the emperor Honorius, then in his fourteenth year, in the year 398 of the Christian era. Ten years after, she died, as the historians say, still a virgin. Two years after this marriage, Alaric, king of the Visigoths, who had been prevented by Stilicho, in the year 397, from subduing Greece, resolved to avenge himself, and in the year 400, attacked Italy. Honorius fled from Milan to the castle of Asta (now *Asti*), upon the Tanarus. Being besieged there, he was on the point of a shameful surrender, when Stilicho, who had collected the scattered troops of the West, passed the Adda, and saved Italy. Alaric's camp at Pollentia, with the treasures collected in Greece, and Alaric's wife, became the prey of the conqueror. Nevertheless, the king of the Goths marched to Rome. In vain did Stilicho offer to restore his treasures and his wife to induce him to retreat. Another battle was fought at Verona, in the year 403, and Alaric, after an entire defeat, in which he came near losing his life, saw himself obliged to leave Italy. In 404, Honorius, with the victorious Stilicho at his side, entered ancient Rome in triumph. The city received its emperor with rejoicings; and he perpetuated the memory of his presence by an edict suppressing the fights of gladiators at the public games. After a visit of some months, Honorius left Rome to live more securely in the fortified city of Ravenna. Two years later, Radagaisus, at the head of 200,000 Germans, Sarmatians, and other warriors, broke through the Alps, and advanced to Florence. Stilicho, who had been busily forming an army, without being able to prevent the ravages of the barbarians, hastened, with 40,000 men, to support the failing strength of the empire. He enclosed Radagaisus by a chain of forts, supplied the suffering Florence with means of subsistence, while the barbarians were exposed to hunger, and at last, in a general attack, completed by the sword what famine had begun; Radagaisus was taken and executed; the other prisoners were sold as slaves. Thus was Italy a second time delivered; but these repeated blows shook the tottering pillars of the empire. The remainder of the barbarian army invaded Gaul in 407, and the Germans, Vandals, Alans, and Suevi, soon became masters of seven Gallic provinces and of the Rhine, at that time without troops, as Stilicho had collected them to conquer in the fields of Florence. At the same time, the Roman army in Britain revolted, and determined to give themselves an emperor; but the third one chosen, Constantine, a common soldier, whose name was the cause of his elevation, alone maintained himself. His two predecessors Marcus and Gratian, perished by the dagger, after a few months of power. Constantine landed at Boulogne, and the Gallic provinces, forsaken by Honorius and conquered by the Germans, willingly submitted to him. The Goth Sarus, who was charged to bring the rebel's head to Ravenna, thought himself fortunate, after an attack of seven days upon the lines of the sovereign of Gaul and Britain at Vienne, to lead back his exhausted army across the Alps, which now formed the barrier between Honorius and Constantine. The latter, shortly after, in 408, added to his new kingdom that of Spain, (where he had experienced a slight resistance from four relations of the deceased emperor Theodosius, who lived there in opulence), and found the people well disposed to obey him. While these events were taking place between the Alps and the pillars of Hercules, others occurred at the court of Ravenna, which, after a series of misfortunes, of weaknesses, and of crimes, caused the final overthrow of the Western empire. Alaric king of the Goths, had obtained the friendship of his former opponent, Stilicho, and, in consequence of a league of peace and amity with Honorius, was appointed commander-in-chief of the Roman army in Illyria. Stilicho had long contemplated the reunion of the eastern part of this territory with the western, and wished also to employ Alaric at a distance from Italy, by directing him to the gates of Constantinople. Alaric did, indeed, make a few movements in Thessaly and Epirus; but from Æmona he sent to Ravenna a demand for the repayment of large sums, expended in the service of Honorius, and proposed that some western province should be given to him as a permanent settlement for his people, promising to reduce Constantine to submission. After violent scenes in the Roman senate, Stilicho carried his motion, that a sum of 4000 pounds of gold should be given as a subsidy to the impatient creditor. But the secret anger of the senate at this act of condescension, which was caused by Stilicho's better knowledge of the power of the Goth, was shared, and perhaps excited, by the army. Honorius began to fear his old minister. It was now insinuated to him that Stilicho intended to place his son Eucherius upon the throne: he therefore gave his consent to the execution of a man who had been thus far the sole support of the tottering empire of the West. Stilicho lost his head in the year 408. His son, and several of his friends, underwent a similar fate; and Honorius even divorced his second wife, Thermantia, second daughter of Stilicho. From this time the weak monarch found himself in the hands of favourites, who could not estimate how great a service they had rendered Alaric, by causing the death of Stilicho. The foreign mercenaries, who had been faithfully devoted to the old general, revenged his death by passing over, to the number of 30,000, to the service of Alaric. The court at Ravenna was still deliberating how it should answer the demands of Alaric, when the latter crossed the Alps, the Po, pressed forward to Rimini, seized the passes of the Apennines, and, in 408, fixed his camp before Rome, which he surrounded so completely as to reduce the city to the most deplorable extremity for want of food. When an ambassador from Rome, sent to Alaric's camp, dared to declare to him that, if he rejected an honourable capitulation, the whole population would rush out against him, the ferocious warrior answered abruptly, "The thicker the grass, the easier to mow." After having demanded an enormous ransom for the city, he was asked, "And what will you leave us, if you demand this of us?" "Your lives," was the reply. He yielded, however, in some of his demands (see *Alaric*), and left the neighbourhood of Rome, to take up his winter-quarters in Tuscany. Soon after, his army was increased to more than 100,000 men, his brother-in-law, Adolphus (Ataulf,) having fought his way to him from the Danube, with a body of Goths and Huns. After fruitless negotiations for peace with Honorius, Alaric, who had taken possession of the port and town of Ostia, marched back to Rome, where, with the consent of the people and the senate, he named a new emperor, the prefect Attalus, and took him with him to Ravenna in 409. Honorius was on the point of throwing himself into the arms of his cousin, the young emperor Theodosius, at Constantinople, when he saw his throne saved by the fidelity and wisdom of his general Heraclian in Africa, by the fidelity of his body-guard, secured by largesses, and by the imprudent measures of Attalus. Alaric himself deposed Attalus, and sent the ensigns of his dignity to Ravenna. But Sarus, the general of Honorius, attacked Alaric, killed many of his followers, and declared him an enemy of the empire, and unworthy of the alliance of his emperor. He therefore returned to Rome, which he took in the night of the 24th of August, 410, one of the gates having been opened to him by the treachery of slaves in the town. The old capital of the world was pillaged, and in part burned. The treasures of the inhabitants, including many valuable works of Roman or German art, became the prey of the barbarians. The churches and their treasures remained inviolate, by the special order of Alaric. This took place 1163 years after the building of the city by Romulus. Alaric now left Rome, and pillaged the south of Italy, where he died in 410. Adolphus, his successor, left Italy in two years, laden with the booty of Rome and of the southern provinces, after having received in marriage Placidia, the sister of Honorius. He went, in 412, to Gaul and to Spain, where he founded the kingdom of the Visigoths. Italy now breathed more freely. Rome arose proudly from its ashes; and the empire might perhaps have acquired new vigour, but for the weakness of its ruler, who lived eleven years after the departure of Adolphus. Gaul, indeed, was brought again under his power by the valour of the Roman general Constantius, who conquered Constantine, and obtained in recompense the hand of the widow of Adolphus, who had shortly before been murdered, and a share in the imperial power with Honorius. But Gaul, as well as Spain, was incessantly torn by domestic strife. Britain and Africa were lost, and the most unhappy discord reigned at Ravenna, where Placidia, a second time a widow, after the death of Augustus Constantius, was seeking to retain her power, when Honorius died, on the 24th August, 423, in the twenty-eighth year of his reign. Placidia carried the news to Constantinople, whither she had fled with her children, on account of the troubles at Ravenna. Under the protection of her nephew, Theodosius II., the young emperor of the East, the son of Placidia and Constantius, a child of but six years, was proclaimed emperor of the West, with the title of Valentinian III. Placidia was declared regent, and maintained her power as such during twenty-five years, in which the Western empire was continually brought nearer to its fall. Under Valentinian, the Vandal kingdom was founded in Roman Africa, by Genseric, king of the Vandals, in 428. The Western empire experienced a further loss in the cession of the western part of Illyria to the emperor of the East, by which Placidia obtained in marriage for her son, Eudoxia, the daughter of Theodosius and Athenais, in 437, and likewise indemnified the court of Byzantium for the expenses of a war against John, who had been private secretary of Honorius, and, after his death, had sought to obtain possession of the throne. Attila, king of the Huns, an ally of Genseric, now demanded the hand of Honoria, sister of Valentinian, with her inheritance. From Constantinople, whither she had been banished on account of her too great intimacy with her chamberlain Eugenius, she had offered to the king of the Huns her person and her claims upon Italy. A refusal immediately caused a war, which Attila began with an attack upon Gaul, and which ended with a great battle in the Catalaunian plains (near Chalons), in 450, when the Roman general Aëtius, together with Theodoric, king of the Goths, defeated the army of Attila, and might perhaps, have entirely destroyed his power, if the political consideration of preserving in the Huns a counterpoise against the powerful Goths, had not induced Aëtius to retreat, and to separate from his ally. Thereupon Attila, to make good his claims upon the princess Honoria and her inheritance, broke into Italy, in 451, where he destroyed Aquileia, Padua, Vicenza, Verona and Bergamo. He had plundered Milan and Pavia, when Valentinian made proposals of peace by an embassy sent from Rome. The eloquence of the bishop of Rome, Leo I., who was at the head of the deputation, and the impression which his representations produced on Attila, induced him to refrain from the pillage of Rome, for a sum equal in value to the inheritance of Honoria. The beautiful Ildico made Attila forget Honoria, who, by imprisonment for life, atoned for her desire to become queen of the Huns. After the death of Attila, in 453, Valentinian might have ruled happily, had he been able to restrain his passions. The insinuations of the eunuch Heraclius made him suspect treachery in the pride of his general Aëtius. He therefore slew him with his own hand, in an altercation in the palace at Rome. He afterwards dishonoured the wife of the senator Maximus. The injured husband avenged himself, and, on the 15th March, 455, Valentinian fell on the field of Mars, with his favourite Heraclius, under the swords of two followers of the murdered Aëtius, who belonged to the emperor's body-guard. The senator and patrician Petronius Maximus was hereupon proclaimed emperor by the senate and people. He married his son to the eldest daughter of the late emperor, and obliged Valentinian's widow, Eudoxia, to espouse him. After three months, he fell a victim to her hatred. Eudoxia, unable to obtain assistance from Constantinople, called upon king Genseric, in Carthage, to deliver her from an abhorred husband. Genseric landed in the port of Ostia. The flying Maximus was stoned in the streets of Rome, and thrown into the Tiber; but the capital, again saved, by the eloquence of Leo the Great, from fire and sword, was pillaged during fourteen days. All the monuments of former times, and all the wealth collected in forty-five years, since the sack of Alaric, became the prey of the conquerors, who likewise dragged to Africa, in their ships, many thousand Romans of both sexes. While these events were taking place in Rome, Avitus, a Gaul, prefect of Gaul under Valentinian, and appointed by the emperor Maximus general of the army in that country, a man of great talents and knowledge, supported by Theodoric, king of the Visigoths, received the crown of the Western empire at Arles, August 15, 455, was acknowledged by the court of Constantinople, and also, though with secret dissatisfaction, by the senate and people of Rome. Theodoric, who went, as an ally of the Romans, to drive the Suevi from Spain, treated that country with the severity of a conqueror. Avitus rendered himself contemptible by his sensuality. Ricimer, one of the chief commanders of the mercenary troops, sent for the defence of Italy, after a victory over the fleet of the Vandals, returned, and was hailed by the people as their deliverer, and announced to Avitus, Oct. 16, 457, that his reign was ended. Avitus, condemned to death by the senate, fled, and perished in his flight. Majorian, formerly a soldier under Aëtius, was now raised by Ricimer to the imperial dignity, which he adorned by his virtue and his wisdom. Many useful regulations, especially with regard to taxes and public morals, distinguished his domestic administration, while, at the same time, he had the good fortune to defeat Theodoric, and also to obtain some advantages over Genseric, who had again attacked Italy. Nothing but the accidental loss of his fleet, in the year 460, prevented him from utterly destroying the power of the Vandals. But Rome was no longer worthy of such a ruler; and Majorian fell a victim to the general corruption, and the hatred of his enemies. Ricimer suddenly took from him the purple, and, five days after, his life, August 7, 461, having spread the report that he had died of the dysentery. A certain Livius Severus was proclaimed emperor, but was put out of the way in 465. The supreme power, in the course of these five years and the two following, during which the throne remained vacant, was solely in the hands of Ricimer, who did not, however, dare to take the imperial title. But, being pressed by the Vandals, he soon saw himself obliged to ask the assistance of the emperor of the East; and the court of Constantinople made a league with Rome, on condition that it should be left to the emperor Leo to name the ruler of the West. The Grecian patrician Anthemius was appointed, and entered the capital with great pomp, April 12, 467. He gave his daughter in marriage to Ricimer, and many interests formerly divided seemed now reunited for the welfare of Rome. B the war with the Vandals was continued with varying fortune. It cost immense sums; and soon afte a misunderstanding took place between Anthe and Ricimer, the latter of whom had marched t Milan. By the mediation of Epiphanius, bishop of Pavia, a reconciliation was, indeed, effected between them; but, shortly after, Ricimer, at the head of large army, reinforced by the Burgundians an Suevi, appeared before Rome, proclaimed th senator Olybrius, son-in-law to Valentinian, empero of the West, March 23, 472, and took Ro which Anthemius had defended for three mont with a people devoted to his cause. Anthemi was put to death by order of his son-in-law. Ju

11, the city was pillaged, and filled with the blood of its noblest citizens; and Olybrius was placed upon the throne. In the next month, August 20, the tyrant Ricimer died, and, soon after, the new emperor, October 23. Rome now saw itself exposed to the arbitrary caprice of the barbarians, at whose head was Gundobald, nephew of Ricimer, a Burgundian prince. Gundobald named Glycerius, one of his soldiers, emperor of the West, but gave him so little support, that he was displaced by Julius Nepos, a nephew of Marcellinus, and governor of Dalmatia, who had been proclaimed by the court of Constantinople. Glycerius received, instead of the empire, the bishopric of Salona (474). Shortly after ascending the throne, Nepos made peace with the Visigoths, ceding to them the territory of Auvergne; but, soon after, a rebellion of the allied barbarians, under the command of their general Orestes, obliged him to fly from Ravenna to Dalmatia. The fugitive emperor lived there five years, until he was assassinated at Salona, at the instigation of Glycerius, who received, perhaps on this account, the archbishopric of Milan. Romulus Augustus, son of Orestes, was proclaimed emperor of the West, in 476. The fall of the empire was now at hand. The German troops, Herulians, Rugians, &c., revolted under their general Odoacer, when Orestes refused to divide among them a third part of the Italian territory. Pavia, where he sought to defend himself, was taken by storm; Orestes was executed; Augustus abdicated; Odoacer was proclaimed king by his army, and the senators of Rome sent an embassy to the emperor Zeno at Constantinople to declare "that it was neither necessary, nor desirable, that Italy should any longer be governed by an emperor of its own; and therefore they acknowledged, in the name of the people, that the seat of the general government being transferred from Rome to Constantinople, they renounced the right of choosing an emperor for themselves. The republic, however, confiding in the virtues of Odoacer, humbly prayed that the emperor would grant him the title of patrician, and the administration of the Italian province." So low had Rome fallen! The emperor Zeno first gave the senate to understand that Nepos, who was still living in Dalmatia, was the lawful sovereign of Rome; but, soon after, pleased with the prospect of being sole ruler, he received the honours of the emperor of the West. The dethroned monarch, Romulus Augustus, whose first name had been changed, in Constantinople, to that of *Momyllus*, and whom the Romans called, in derision, *Augustulus*, was banished by Odoacer to the villa of Lucullus, in Campania, with a yearly pension of 6000 pieces of gold. Soon after, in the year 486, the Franks established their kingdom in Gaul. Thus the barbarians had risen in proportion as the spirit of the Romans had declined. From mercenaries of Rome they had become its allies; from allies its masters. King Odoacer ruled Italy for fourteen years. In the year 491, he was conquered by Theodoric, king of the Ostrogoths, who, in 493, founded the kingdom of the Ostrogoths on the classic ground of Italy. The name of Rome was all that remained of that empire, which had subsisted twelve centuries since its foundation by Romulus. In the history of the decline of this gigantic state, we see the causes of its fall. The prevailing corruption of manners destroyed all moral energy; and, from the time when Honorius ascended the throne, to the total overthrow of the empire, it was in a continual death-struggle. The system of dividing the empire, introduced by Diocletian, in 284, and completed by Theodosius, was the chief cause of its political weakness and final dissolution, which its moral degradation made it impossible to avert, especially as the increase of civilization among the barbarians who had broken into the empire, gave them an overwhelming power. A new order of things commenced: the feudal system, introduced by the Ostrogoths, Franks, and Lombards, altered the whole character of a state which for centuries had boasted of a republican constitution; and even the Roman language gave way before the total change in the spirit of the times; and its place was supplied by the Italian, French, Spanish and English tongues. See *Byzantine Empire.*

WESTERN ISLANDS. See *Hebrides*, and *Azores.*

WESTERWALD; a chain of mountains in the Prussian government of Coblentz, and the duchy of Nassau, connected with the Siebengebirge. The highest point is near Neaburg and Salzkirch, 2600 feet above the level of the sea. Flax is cultivated and cattle raised on the Westerwald. It affords iron, copper, excellent building stone, and great quantities of brown coal.

WESTMEATH; an inland county of Ireland, in the province of Leinster, is bounded on the north by Cavan, on the east by Meath, on the south by King's County, and on the west by Roscommon and Longford, from the former of which it is separated by the Shannon. It is about twenty-five miles long from north to south, and twenty-four from east to west, and contains 562 English square miles, and 378,880 English acres. It is divided into twelve baronies, and sixty-two parishes, of which 21 have churches, all of them being in the diocese of Meath. The general aspect of this county is diversified with large lakes, woods, unproductive bogs, and rich grazing lands. The surface rises into small hills cultivated to the top, or covered with wood. The principal rivers are the Shannon, Inny, and the Brosna. The Shannon extends into a fine lake called Lough Ree, or the Royal Lake. The Inny, rising in Cavan, enters Lough Shelin on the borders of Westmeath, and after passing through Loughs Derveragh and Iron, falls into Lough Ree. The principal lakes are Lough Ree, full of wooded islands, Lough Shelin, Leigh, Iron, Derveragh, Hoyle or Owell, and Ennel, some of which are encircled with well cultivated land, and others with low wooded hills. They are well stored with fish. The soil is generally light, though in some places deep and rich. Most of it lies on limestone, and yields very fine pasture, supporting a great many fine large horned cattle, and long woolled sheep. Tillage is carried on upon a limited scale, but still to such an extent as to supply the home consumption, and allow the farmers to contribute to the exportation of oats from Drogheda. Beside the usual crops, flax, hemp, and rape are raised; and clover and turnips to a small extent. The principal towns are Athlone, which is partly situated in Roscommon, Mullingar, the county town, Mool-grenogner, Kilbeggan, and a few other small places. Mullingar is a large and well built town, with extensive barracks, and carries on a considerable trade, and the rest are places of little note. Population in 1831, 136,799.

WESTMINSTER, a city of Middlesex, England, the seat of government, the residence of royalty, and the centre of fashion, is now so united with London, that, in appearance, they form one city, and, in ordinary speech, are mentioned as one, though they have their separate jurisdictions. (See *London.*) Temple bar separates the two cities. Westminster lies in the west of London proper, with which it formerly communicated by means of the Strand, and forms the west end, or fashionable residence of the nobility and gentry. The existence of Westminster is derived from the foundation of the Abbey. In 1259, Henry III. granted to the abbot and convent of Westminster Abbey a market and fair, which was the origin of the city and liberties of Westminster. At the general suppression of religious houses by Henry VIII., it was converted into a bishopric, which, however, was transferred to Norwich in 1550. The city of Westminster is comprised in two parishes, St Margaret and St John, and the liberties consist of seven parishes. The population of the city and liberties, which return two members to Parliament, is, by the census of 1831, 202,090. Here are Westminster hall, abbey and school, St James's palace, Buckingham house, Carlton house, Whitehall palace, &c. Westminster hall, memorable as the scene of so many interesting transactions, was built by William II., in 1097, and entirely repaired, with many alterations, by Richard II., in 1397. The hall exceeds in dimensions any room in Europe unsupported by pillars, being 270 feet in length, ninety in height, and seventy-four in breadth. Parliaments have often sat in the hall, and the courts of chancery, exchequer, king's bench, and common pleas, have been held here, in different apartments, ever since the reign of Henry III. It has also been used for the trial of peers, and other distinguished persons, accused of high treason, or other crimes and misdemeanours, such as the late Lord Melville, Warren Hastings, &c. In this hall, likewise, are held the coronation feasts of the kings of England. The old palace, at the south end of the hall, including the chapel of St Stephen, before they were destroyed by fire, used to accommodate the two houses of parliament. Westminster abbey was built by Edward the Confessor, about 1050, on the site of an old Saxon church; but all that part which extends from the eastern extremity to the entrance of the nave was rebuilt in its present state by Henry III. (1220—1269). The nave was carried on slowly afterwards; and the towers were not completed till the time of Sir Christopher Wren, who finished them as they now are. The chapel, which bears the name of Henry VII., was built by that monarch in 1502, as a royal sepulchre. The general plan is that of a Latin cross, of which the nave is 234 feet long from west to east, and 90 feet wide. The transept is 225 feet long from north to south, and 100 feet wide. Beyond the transept, towards the east, are five chapels. In the poets' corner are the monuments of most of the distinguished poets of England; and in other parts of the abbey are those of distinguished statesmen, warriors, scholars, and artists. The kings of England are crowned in the choir of the abbey. Westminster school was founded by queen Elizabeth, in 1590, for the education of forty boys, denominated the *queen's scholars*, who are prepared for the university. It is situated within the walls of the abbey, and is separated into two schools or divisions, comprising seven forms or classes. Besides the scholars on the foundation, many of the nobility and gentry send their sons to Westminster for instruction, so that this establishment vies with Eton in celebrity and respectability. They have an upper and an under master, with numerous assistants. Of these masters many have been eminent in the walks of literature, particularly doctor Busby, so celebrated for his severity of discipline, and doctor Vincent, the author of the Voyage of Nearchus. See the *History of the Abbey Church of St Peter's Westminster, its Antiquities and Monuments* (2 vols., quarto, London, 1812); and Neale's *History and Antiquities of Westminster Abbey illustrated* (1816 and 1823, with 61 engravings).

WESTMORELAND; a northern county of England, is bounded on the east by Yorkshire and Durham, on the north and north-west by Durham and Cumberland, and on the south-west by Lancashire, a narrow stripe of which separates it from the sea. It is of a very irregular shape, its greatest length being about forty, and its greatest breadth thirty-five miles. It contains 763 square statute miles, and 488,320 English statute acres. The county is divided into two baronies, namely, that of Kendal, and that of Westmoreland, and into four wards, viz., those of Kendal and Kirkby Lonsdale, in the barony of Kendal, and the east and west wards, in the barony of Westmoreland. The general aspect of Westmoreland, presents a great extent of bleak and barren fells and moors, and groups of lofty, naked, and picturesque mountains. Three-fourths of the county nearly consists of uncultivated land. The mountain valleys, which form the beds of the rivers, are moderately fertile, and yield good crops of oats, and in some instances of wheat and barley. Agricultural improvement has advanced rapidly in this county. The clover and turnip husbandry has made great progress, and through a large portion of the bottom of Westmoreland, and in the parishes of Heversham, Burton, and Kirkby Lonsdale, considerable quantities of wheat are annually raised. Many commons have been inclosed, and immense tracts drained. The cattle of this county are of the long-horned breed, and attain a large size. The mountainous districts support large flocks of sheep, which yield a coarse wool, but the breed has been lately much improved by crossing. Great numbers of geese are fed on the moors, and along with hams are exported in great quantities. The principal mountains in Westmoreland are Crossfell, the highest of the chain on its eastern boundary, and 3000 feet above the sea. Helvellyn is 3100 feet high, Bowfell and Rydalehead, each 3090, and the High Street is 2736 feet high. This last mountain derives its name from a broad green road along its summit, where the shepherds have annual horse races on the 10th of July. The principal rivers of the county are the Eden, the Lune, the Kent, the Eamont, the Winster, and the Lowther, none of which are navigable. They contain abundance of fish, and exhibit much picturesque scenery. The principal lakes are Windermere, Ulles-water, Grass-mere, Rydale-water, Eter-water, Hause-water, Red Tarn and Small-water, and Skeggles-water. The mineral productions of Westmoreland are lead, copper, coal, limestone, blue slate, marble, gypsum, and freestone. The best coal is found in the confines of the county in Stanemore forest. An inferior slaty coal is found in several places, but it is used only for burning lime. Marble has been wrought near Kendal on both sides of the Kent. The manufactures consist chiefly of silk and worsted waistcoat pieces, knit worsted stockings, flannels, cotton goods, gunpowder, and tanned leather. The exports are principally coarse woollen cloths, stockings, slates, tanned hides, gunpowder, hoops, charcoal, hams, cattle, sheep, and wool. Population in 1831, 55,041.

WESTPHALIA; a name, 1. originally given to a large part of Germany; 2. to a duchy in Germany; 3. to one of the circles of the German empire; 4. to a kingdom; 5. to a province of Prussia —of which we shall treat in the above order.

1. The name of *Westphalia* was given in the middle ages, to all the country between the Weser, Rhine, and Ems, while the territory between the Elbe and Weser was called *Eastphalia*. The latter name was lost in the course of time: the former was retained, and was subsequently given to the circle of Westphalia, and to the Sauerland, or the duchy of Engern.

2. *Duchy of Westphalia*. In early times, this formed part of the great duchy of Saxony, and was then called *Sauerland*, a name which is still in use among the common people of that country, and includes also a part of the former county of Mark. In 1179, when Henry the Lion was put under the ban of the empire, the archbishop of Cologne received it from the empire as a fief, under the name of *Westphalia*, after which the name passed over to the country. Cologne remained in possession of it until the dissolution of the archbishopric, in 1802, upon which it was given, by way of indemnity, to Hesse-Darmstadt. In 1815, it was ceded by this power to Prussia, and was united with the Prussian province of Westphalia. It then contained 1530 square miles, with 134,715 inhabitants.

3. *Circle of Westphalia*. This comprised not only the land between the Weser, Rhine, and Ems, but also considerable districts on the left bank of the Rhine; but the proper duchy of Westphalia, as an appendage of Cologne, was considered as belonging to the electoral circle of the Rhine. It had also the official name of the *Westphalian Circle of the Lower Rhine*. It was one of the larger circles of the ancient empire.

4. *Kingdom of Westphalia*. The peace of Tilsit had made Napoleon master of all the Prussian territory west of the Elbe, and he also kept possession of the territories of the electors of Hesse and Hanover, and the duke of Brunswick. He had not then conceived the idea of extending the frontiers of the empire beyond the Rhine; and he created, out of the countries just mentioned, a kingdom of Westphalia, comprising all the country of Brunswick-Wolfenbüttel, the electorate of Hesse, (except Hanau and Katzenelnbogen), the Prussian provinces of Magdeburg and Altmark west of the Elbe, Halberstadt with Hohnstein, Hildesheim with Goslar, Mansfeld, Quedlinburg, Eichsfeld with Treffurt, Mühlhausen and Nordhausen, Stolberg-Wernigerode, Paderborn, Minden, and Ravensberg, the Hanoverian provinces, Göttingen, Grubenhagen with Hohnstein and Elbingerode, and Osnabrück, Corvey, and the county of Rittberg. The area amounted to 1530 square miles, with 1,946,343 inhabitants. November 15, 1807, the kingdom of Westphalia was created, and Jerome, the brother of Napoleon, then only twenty-four years old (see *Jerome*), was made king, with a constitution formed in close imitation of that of the French, which abolished feudalism, and might have done good in various respects, could it ever have gone into full operation free from the weight of foreign influence which continually pressed upon the kingdom.* Jerome appeared, Dec. 7, in Cassel, and entered on the government, but conducted, as might have been expected, not like a king, but rather like a French prefect. The situation of this new kingdom was deplorable. All the provinces had been systematically exhausted by the French, before they were united into a kingdom; in addition to which, the emperor had retained half of all the domains, or public property, in order to make grants therefrom to his soldiers; had stipulated that he should keep 12,500 men in Magdeburg, to be supported, clothed, and paid by the people of the country; and the kingdom was to pay all the contributions which had been imposed upon the several territories composing it when they were conquered. Westphalia was, in many respects, but a province, a territory of France, without enjoying the advantages which it might have derived from forming an integral part of the empire, and having the additional burthen of a large army and an expensive government. On the other hand, we must not omit to state the advantages which grew out of the intimate connexion of this new kingdom with France. The greatest were, as we have already said, the abolition of feudalism, and an increased estimation of the lower classes, a greater willingness to acknowledge their rights, e. g. in respect to the administration of justice, the distribution of the public burthens, their participation in the municipal administration, &c. The finances of the kingdom were in great embarrassment when it went into operation, and always remained so during the seven years of its existence, large sums going every year to France without any equivalent, and the kingdom being obliged to take part in all the great movements of the empire. The young inexperienced monarch had, indeed, counsellors around him, who did the best that could be done under the deplorable circumstances of the kingdom. Within a short time, an army of 16,000 men was formed. The French code, though at first much disliked, gradually began to find less opposition from the people; the taxes, though high, were more

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* The emperor Napoleon gave this constitution to the country, as its preamble declares. It stipulates of what the kingdom of Westphalia is to consist; that half of all the domains of the former princes shall be at the emperor's disposal, to be given to his officers of the army; that Westphalia is to form part of the confederacy of the Rhine, with a contingent of 25,000 men, of whom, however, in the "first years," only half are to be raised; the other half to be furnished by France, and to form the garrison of Magdeburg; that Jerome Napoleon is to be king, his direct male descendants to succeed him; the king to remain always subject to the imperial family statutes; in case of minority, Napoleon, or his descendants, to appoint a regent; the king and his family to have a revenue of 5,000,000 francs, to be raised from the other half of the domains, with additions from the public treasury, if they should fail to yield the requisite amount. It further provides that there shall be a constitution securing the equality of all the subjects and freedom of worship; that the feudal privileges, and those of corporations, shall be abolished, but the different ranks of nobility are to continue; one system of taxes to embrace all classes; the tax on real estate not to exceed a fifth of the revenue; four ministers to be appointed, and a council of state; laws respecting the finances, civil and penal legislation, to be drawn up in the council of state, to be discussed by committees of the chamber, their reports to be discussed by the council of state, and the law, as finally settled by the council of state, under the presidency of the king, to be laid before the chamber; the estates to consist of one hundred members (seventy to be chosen of owners of real estate, fifteen of merchants and manufacturers, and fifteen of literary men); a third part to be renewed every three years; their president to be nominated by the king; their debates to be secret; the country to be divided into departments, &c., with prefects, &c., and departmental colleges, &c., as in France; the *Code Napoleon* to be adopted January 1, 1808; the administration of justice to be public, in penal cases with the aid of juries; a new system of penal jurisprudence to be adopted July, 1, 1808; courts of the peace to be established, with justices of the peace; the judges to be independent, appointed by the king; the judges to be removable only by the king, and only after sentence by the court of appeal, on charges presented by the royal procurator, or one of its presidents; no enlisting of soldiers for money to take place; the army to be supplied by conscription. Dec. 23, 1808, a supplementary statute was issued, establishing one more minister.

uniformly distributed than ever before; and the new constitution afforded advantages to the great body of the people, which they soon began to estimate. The government gained in firmness as the prejudices against it diminished. The king, besides his civil list, had 1,000,000 francs as a French prince. He was much inclined to dissipation, but, at the same time, disposed to do good to his people. In 1809, internal commotions began, occasioned by the war between Austria and France. The eastern frontier of the kingdom was attacked by a corps under Schill. In the south, an insurrection broke out among the peasants near Marburg. These circumstances gave rise to severe measures, and the extension of the high police. The king was obliged, by France, to increase his army to 30,000 men; and the taxes were, in consequence, so much augmented that, neither the minister of finances nor the estates of the kingdom knowing any other means to provide for the exigency, the public domains were sold, and the public debt was arbitrarily reduced, by expunging a certain portion of each man's demand. In 1810, the whole of the former Hanoverian territory was united to Westphalia; but hardly had she taken possession of it, when another imperial decree was issued, annexing not only this newly-acquired territory, but also the former provinces of Osnabrück, Minden and part of Ravensberg, to the French empire. It was of no avail that the king strove to prevent this measure by personal representations in Paris; he was obliged to submit, and, moreover, to adopt the continental system (q. v.): but this was not so oppressive in Westphalia as in some other countries, the government mitigating its rigour as much as possible. In 1812, the king led his army to Poland; but the emperor soon obliged him to leave his troops and return. Of his 24,000 men, but few escaped the disasters which befel the French forces beyond the Niemen. A new army, of 12,000 men, was immediately organized, and accompanied the imperial army to Saxony; but the hearts of the soldiers were with their brethren who stood opposed to them. Even before the battle of Leipsic (q. v.), Czernitscheff drove the king from his residence, and occupied Cassel for three days. The king returned with some French troops, but only to receive the news of the great battle of Leipsic, and to leave his residence and kingdom for ever, after having caused every thing valuable in his palaces, and even a part of the treasures of the museum, to be carried off. Two days after his departure, the Russians entered Cassel; and, in a few days, the old governments were re-established almost throughout the kingdom. Oct. 20, 1813, the kingdom of Westphalia ceased to exist.

5. The *Prussian Province of Westphalia* was created, in 1815, out of the provinces which Prussia formerly possessed in the Westphalian circle, with the exception of the duchies of Cleves and Berg, and the abbeys of Essen and Werden. It is bounded by the Netherlands, Hanover, Brunswick, the two Lippes, electoral Hessia, Waldeck, Hesse-Darmstadt, Nassau, the Lower Rhine, and Juliers-Cleve-Berg. The southern and eastern parts are mountainous, yet have some fertile plains; the northern and north-western parts contain considerable heaths. The climate is generally moderate, but rough in the mountainous parts of the Sauerland. The Weser, Ems, Lippe, and Ruhr, are the most important navigable rivers. The products are cattle, grain, flax, wood, much iron, copper, calamine, lead, coals, salt, minerals waters, &c. The agricultural products are not sufficient to supply the inhabitants. The manufacture of linen, and all kinds of iron and steel wares, is extensive. Many of the inhabitants of the northern parts go annually to the Netherlands, to assist in gathering the harvest, and to dig turf. The whole province contains 7780 square miles, and, with the military, 1,096,000 inhabitants, partly Catholics, partly Protestants, chiefly Lutherans. It is divided into three governments, Münster, Minden, and Arnsberg, with capitals of the same names. In Hamm, a periodical called *Archives of History and Antiquities* is published by a society for promoting the knowledge of the history and antiquities of Westphalia.

WESTPHALIA, PEACE OF; the name given to the peace concluded in 1648, at Münster and Osnabrück (both situated in Westphalia), by which an end was put to the thirty years' war (q. v.), and a new political system was established in Europe, which continued till the breaking out of the French revolution. For Germany, particularly, it became the foundation of the whole political system—a system unwieldy and oppressive. This peace was not concluded until after seven years of negotiation and preparation. Towards the end of 1641, preliminaries were agreed upon at Hamburg, having reference chiefly to the mode of proceeding in regard to the future peace, and the place where the deliberations should be carried on. The actual negotiations did not commence until 1644, at Osnabrück, between the ambassadors of Austria, the German empire and Sweden; at Münster, between those of the emperor, France and other powers; but the articles adopted in both formed one treaty. This division of the members of the diplomatic congress was intended partly to prevent disputes on points of etiquette between France and Sweden, partly because Sweden refused to have any thing to do with the papal nuncio, who was sent to assist in negotiations. Quarrels on points of etiquette, carried to the most ridiculous extreme, prevented the opening of the congress for a long time. The ministers of princes claimed the title of *excellency*, like those of the electors. A round table was adopted for the sessions, in order to evade other punctilios. Peace was concluded at Münster, whither the ministers, who had been at Osnabrück, repaired, after they had also concluded a treaty shortly before, on October 24, 1648. By this peace, the religious and political state of Germany was settled: the sovereignty of the members of the empire was acknowledged. They received the right of concluding treaties among themselves and with foreign powers, only not against the emperor and empire. Their consent was made necessary to enable the emperor to put any of the members under the ban. The electoral family of the Palatinate received back the Palatinate (q. v.) of the Rhine, and the eighth electorship was created for it, with a provision, however, that this should be abolished in case the Bavarian house should become extinct (as actually happened in 1777), since the Palatine house would then recover the Bavarian electorate. The changes which had been made for the advantage of the Protestants since the religious peace, in 1555, were confirmed by the determination that every thing should remain as it had been at the beginning of the (so called) *normal year*, 1624. The Calvinists received equal rights with the adherents of the Augsburg Confession, or the Lutherans. The princes of the empire were bound not to procute or oppress those of their subjects whose religious faith differed from their own. After all impediments in the way of the system of toleration had been overcome, the ambassadors embraced and shed tears of joy. Several religious foundations were secularized, and given as indemnifications to several members of the empire, in which the emperor acquiesced to secure the integrity of his hereditary states. The empire ceded Alsatia to France, to its lasting injury; Sweden received Hither Pomerania, Bremen, Verdun, Wismar, and 5,000,000 of German dollars for her troops. Brandenburg received the secularized bishoprics of Halberstadt, Minden, Camin, and the version of Magdeburg. Mecklenburg received the secularized bishoprics of Schwerin and Ratzeburg; Hanover, alternately with a Catholic bishop, the bishopric of Osnabrück and some convents; Hesse-Cassel, the abbey of Hirschfeld and 600,000 German dollars. The United Netherlands were acknowledged as an independent nation, and the Swiss as entirely separate from the German empire. France and Sweden undertook to guarantee this peace. The solemn protest of pope Innocent X. against these terms, particularly in respect to the injury done to the papal see by the secularization of bishoprics and abbeys, &c., was not regarded; but the complete execution of the conditions of the treaty was obstructed by many difficulties. The war was even continued between France with Savoy on the one side, and Spain with Lorraine on the other; also between Spain and Portugal.—See Von Woltmann's *History of the Peace of Westphalia* (2 vols., Leipsic, 1808).

This peace gave the death-blow to the political unity of Germany. It made the German empire, which was always a most disadvantageous form of government for the people, a disjointed frame, without organization or system. Ferdinand II., had it not been for his intolerance, might have had it in his power, after the peace of Lübeck with Denmark, in 1629, to give once more consistency to the empire; whether, on the whole, to the advantage of the people, or not, we do not say. But by the "edict of restitution" effected by the Jesuits, he deprived himself of the fruits of Tilly's and Wallenstein's victories. Every German prince and petty monarch now thought only of his own house; and the German empire not only lost, by the peace of Westphalia, a territory of 40,000 square miles, with 4,500,000 inhabitants, but also its western military frontier; while Lorraine, on the side of Alsatia, and the Burgundian circle in the west and north, were left without defence. The internal trade of Germany was also grievously obstructed by the establishment of above 300 sovereigns. On the other hand, the right procured by France for every member of the empire to conclude separate alliances, which gave to Bavaria, Brandenburg, and other German houses, importance in the general European politics, together with the influence of foreign powers, as Sweden, on the politics of Germany, made this country thenceforth the theatre of all the quarrels of Europe. One military state after another was established; and the German nation, impeded, in a thousand ways, in its manufactures and commerce, laboured only to support a number of petty, yet overgrown armies, ridiculous courts and foreign embassies. The aristocratic principle was developed at the expense of the monarchical, so that the empire, which always had the disadvantages both of an electoral and a hereditary monarchy, without the advantages of either, now became entirely crippled. France and Sweden acquired great influence in Germany by this peace, owing to the contemptible pride of the petty princes of the country, and their insensibility for the general well-being of the nation. Though well aware that such speculations are useless, the historian can hardly help asking himself, How different would have been the destiny of Europe but for the ball which put an end to the precious life of Gustavus Adolphus, on the field of Lützen?

WETSTEIN; the name of a family long resident at Basle, several of the members of which were highly distinguished as scholars and theologians.

John James Wetstein, born in 1693, is said to have graduated at Basle as a doctor in philosophy before he had reached the age of seventeen. Having entered the church, he devoted himself, with uncommon ardour and perseverance, to the restoration of the purity of the text of the New Testament, and, in pursuance of this object, visited most of the principal libraries of France, Switzerland, Germany and England, examining and collating their various manuscripts. On his return to Basle, he declared his intention of publishing a new treatise on this important subject, under the title of *Prolegomena ad Novi Testamenti Græci Editionem accuratissimam e vetustissimis Codicibus Manuscriptis denuo procurandam.* This annunciation excited considerable uneasiness among the German divines, who exerted themselves with such effect to procure the suppression of a work which, they feared, might unsettle the received version, that the council refused to sanction or permit the publication. Wetstein, in consequence, removed to Holland, where he published his book in 1730, and was soon after appointed by the Remonstrants to the professorship of history and philosophy, then become vacant by the resignation of Le Clerc. In 1751—1752 appeared his last work, an edition of the New Testament, in two folio volumes, with the text as generally received, and the various readings, notes, &c., below. To this he also annexed two curious epistles of Clemens Romanus, from a Syriac manuscript, with a Latin version. He died at Amsterdam, March 24, 1754.

WETTER, a lake of Sweden, in East Gothland, sixty-five miles long, and from ten to sixteen wide, is deep and clear. It is supposed to prognosticate the approach of stormy weather. Like all inland pieces of water surrounded with mountains, it is subject to sudden storms in still weather; and superstition has reported that these storms are occasioned by a subterranean communication with lake Constance, in Switzerland.

WETTIN, COUNTS OF; a distinguished family in the middle ages, from which all the present reigning houses of Saxony derive their origin. The name is taken from a Sclavonic place, in the duchy of Magdeburg. The first of this family, known with certainty, is Dieterich, count of Wettin, who died in 982. His descendant, Frederic the Warlike, was infeoffed by the emperor Sigismund, in 1423, with Saxony, and the dignity of elector was connected with his fief. See *Saxony*.

WEXFORD; a maritime county in the south-east of Ireland, is bounded on the east and south by the sea, on the west by Waterford, Kilkenny, and Carlow, and on the north by Wicklow. It is about fifty-six miles long from north to south, and thirty-two from east to west, and contains 934 English square miles, and 597,760 English acres.

The county is divided into eight baronies, and 142 parishes, all of which but two are in the diocese of Ferns. The two islands called Salters belong to the county. This county is mountainous in its north, north-west and west confines. It contains much coarse land, and stiff clay soil, which, from the want of limestone, it is difficult to improve. The best part of the county is the baronies of Bargie and Forth on the east, where the land is less elevated, and where the soil is sufficiently light to produce excellent crops of barley. Beans are successfully cultivated, and also clover and turnips. Potatoes are planted in drills, and lime and marl, though expensive, are much used as manure. Whole fields are kept under furze as in Cork and Waterford for fuel. Although there are no rich grazing farms, yet there are numerous dairies, which are ill-managed. The cows and the sheep are of an inferior kind. The rivers are the Slaney and the Barrow. The former crosses the county from Newton-Barry to Wexford, and receiving the Barrow from the north, exibits on its fine wooded banks much beautiful and picturesque scenery. It is navigable to Enniscorthy near the middle of the county. By means of the Barrow, which divides the county from Kilkenny on the west, large vessels can reach the town of New Ross, situated near the junction of the Barrow and Nore. The principal towns are Wexford, the county town, described in a separate article, Enniscorthy on the Slaney, New Ross, and Gorey, and the pleasant village of Newton-Barry. Enniscorthy was once celebrated for its iron works, of which some still exist. The cotton manufacture is now carried on here, and a great deal of coarse woollen cloth is made. There is a fine old castle here in tolerable repair. The town was nearly destroyed during the rebellion in 1798. New Ross, on the Barrow, is well fitted for becoming a place of commercial importance. The buildings are said to be numerous and elegant, and the population rapidly increasing. Vessels of large size can unload at the quay, and it is one of the principal ports for the exportation of wool. Population of the county in 1831, 182,991.

WEXFORD; a seaport town of Ireland, situated at the mouth of the river Slaney. The town is irregularly built, and the streets narrow, but it contains some handsome buildings. The church, situated in the principal street, is an elegant modern structure. The market and court-house are built with much taste, and the barracks erected on the site of the old castle, command an extensive view. The great ornament of the town is the wooden bridge thrown across an arm of the sea 2100 feet wide, where it was found impracticable to erect a bridge of stone. This bridge is the favourite promenade. Wexford was once a place of great strength, and some remains of its ancient thick walls still exist. The harbour is formed by two tongues of land between which there is an entrance half a mile wide, which was formerly defended by Fort Margaret and Fort Rosslane, built at the end of each isthmus. The harbour, though spacious, is shallow. A good deal of woollen cloth is manufactured in the town and neighbourhood, and the chief trade consists in the exportation of barley, malt, beer, beef, hides, butter and tallow.

WEYDE, ROGER VAN DER. See *Roger*.

WEYMOUTH; a sea-port, borough, and market-town of England, in Dorsetshire, at the mouth of the Wey, celebrated as a fashionable bathing-place. It is situated on the British channel, at the western side of a most beautiful bay, well protected from the north winds by hills. It is 128 miles from London, and 65 from Bath. It communicates with Melcombe Regis, to which it is united by a handsome new bridge. Weymouth became a place of fashionable resort in consequence of its being frequented by George III., and is now greatly enlarged by the addition of many new and elegant buildings. The fashionable promenade is on the esplanade, which is a beautiful raised terrace, of considerable length and breadth, kept in the most perfect repair, with a slope gradually descending to the sands. The united borough of Weymouth and Melcombe Regis sent four members to parliament previous to the reform act of 1832, which deprived it of two of its members. Population of Weymouth in 1831, 2529; of Melcombe Regis, 5126; total 7655.

WEZLAR, formerly a free imperial city, in the circle of the Upper Rhine, since 1814, belonging to the Prussian province of the Lower Rhine, in the government of Coblentz, has a romantic situation on the Lahn. It contains 750 houses and 4200 inhabitants. The principal building is the cathedral. Wezlar is famous for having been, as long as the empire existed, the seat of the court of the empire, called the *imperial chamber*. The papers belonging to 80,000 legal processes are preserved in a particular building in this place. The imperial chamber was fixed in Wezlar in 1693. In 1806, it was, of course, dissolved. In 1803, the city and territory were given to the then chancellor of the empire, subsequently the grand duke of Frankfort

WHALE (*balæna*). These animals so much resemble fish in their external form, that they are almost universally considered as such by the great mass of mankind. If, however, we examine their structure more carefully, we shall find that they differ from quadrupeds only in their organs of motion. They are warm-blooded, breathe atmospheric air only, and by means of lungs, and bring forth and suckle their young in the same manner as quadrupeds: in short, all the details of their organization are the same as in this class of animals. The body and tail are continuous, the latter tapering gradually, and terminating in a large, horizontal, cartilaginous fin: the hind feet are altogether wanting, but their position is marked by two small, rudimentary bones, enveloped in the skin: the fore feet have externally the form of fins or flippers; but they possess the same bones as those of quadrupeds, flattened, however, shortened, and enveloped in a tendinous membrane: the head is of enormous size, often occupying one third of the total length of the animal; and the opening of the mouth corresponds in magnitude: the neck is excessively short, and externally appears to be altogether wanting: the nostrils are the blow-holes or spiracles, situated at the top of the head, by means of which atmospheric air penetrates to the lungs when the animal rises to the surface of the water: the skin is entirely destitute of hairs; and beneath it a thick coating of oily fat, commonly called *blubber*, envelopes the animal: the eyes are exceedingly small, compared with the bulk of the animal, and the external ear is altogether wanting: their senses, in consequence, would not seem to be very acute; neither do they display much intelligence: the sea affords them abundance of food, which they are enabled to procure with little difficulty; and they find in their size and strength a sufficient protection against most dangers.

The common or Greenland whale (*B. mysticetus*) is destitute of teeth, but, in their place, the upper jaw is furnished with transverse layers of a horny substance, called *baleen* or *whalebone*, which, at the edges, split into long, slender fringes. This species is productive of more oil than any other; and, being less active, slower in its motion, and more timid than the rest of its kind of similar magnitude, is more easily captured. When fully grown, its length is from fifty to sixty-five feet, rarely, if ever, reaching seventy, and its greatest circumference from thirty to forty: the ordinary weight is about seventy tons. When the mouth is open, it presents a cavity large enough to contain a boat full of men, being six or eight feet wide, ten or twelve high in front, and fifteen or sixteen long. These animals have no voice, but in breathing or blowing, make a very loud noise: the vapour they discharge is ejected to the height of some yards, and appears, at a distance, like a puff of smoke. The usual rate at which they swim seldom exceeds four miles an hour; and though their extreme velocity may be at the rate of eight or nine, this speed never continues longer than for a few minutes before it relaxes to almost one half. They are also capable of ascending with such rapidity as to leap entirely out of the water, which feat they sometimes perform apparently as an amusement, to the no small terror of inexperienced fishers. Sometimes they throw themselves into a perpendicular posture, with their heads downwards, and, rearing their tails on high, beat the water with tremendous violence: the sea is then thrown into foam, and the air filled with vapours: the noise, in calm weather, is heard to a great distance, and the concentric waves, produced by the concussions on the water, are communicated abroad to a considerable extent. Sometimes the whale shakes its mighty tail in the air, which, cracking like a whip, resounds to the distance of two or three miles. Whales usually remain at the surface to breathe about two minutes, seldom longer, during which time they "blow" eight or nine times, and then descend for an interval of five or ten minutes, but sometimes, when feeding, fifteen or twenty. When struck, they have been known to descend to the perpendicular depth of a mile, and with such velocity, that instances have occurred in which they have broken their jawbones by the blow struck against the bottom. Their food consists of mollusca, shrimps, and other small crustaceous animals. When feeding, they swim with considerable velocity, below the surface, with the jaws widely extended; a stream of water consequently enters the capacious mouth, bearing along large quantities of marine insects. The water escapes again at the sides, but the food is entangled and strained by the whalebone, which, from its compact arrangement, does not allow a particle of the size of the smallest grain to escape. Whales, though often found in great numbers together, can scarcely be said to be gregarious, occurring, most generally, solitary, or in pairs, excepting when drawn to the same spot by the attraction of an abundance of palatable food, or a choice situation of the ice. They occur most abundantly in the frozen seas of Greenland, and Davis's straits, in Baffin's and Hudson's bays, in the sea to the northward of Beering's straits, and along some parts of the northern shores of Asia, and probably of America. They are never met with in the German ocean, and rarely within two hundred leagues of the British coast; but along the coasts of Africa and South America, they are found, periodically, in considerable numbers, and are captured by the southern British and American whalers. It is not, however, certainly ascertained, whether this species is identical with the northern, though it evidently approaches it very closely.

The affections of the whale towards its own kind appear to be strong. The fishers are in the habit of taking advantage of the love of the old whale for its offspring, to entice it into their snares; and the artifice often succeeds when probably, no other would. The cub, though of little value in itself, is struck, to induce the mother to come to its assistance. "In this case," says Captain Scoresby, "she joins it at the surface of the water, whenever it has occasion to rise for respiration; encourages it to swim off; assists its flight, by taking it under her fin; and seldom deserts it while life remains. She is then dangerous to approach; but affords frequent opportunities for attack. She loses all regard for her own safety, in anxiety for the preservation of her young;—dashes through the midst of her enemies;—despises the danger that threatens her;—and even voluntarily remains with her offspring, after various attacks on herself from the harpoons of the fishers. In June 1811, one of my harpooners struck a sucker, with the hope of its leading to the capture of the mother. Presently she arose close by the 'fast-boat;' and seizing the young one, dragged about a hundred fathoms of line out of the boat with remarkable force and velocity. Again she arose to the surface; darted furiously to and fro; frequently stopped short, or suddenly changed her direction, and gave every possible intimation of extreme agony. For a length of time she continued thus to act, though closely pursued by the boats; and, inspired with courage and resolution by her concern for her offspring, seemed regardless of the danger which surrounded her. At length, one of the boats approached so near, that a harpoon was hove at her. It hit, but did not attach itself. A second harpoon was struck; this also failed to penetrate: but a third was more effectual, and held. Still she did not attempt to escape, but allowed other boats to approach; so that, in a few minutes, three more harpoons were fastened; and in the course of an hour afterwards, she was killed."

The instruments of general use, in the capture of the whale, are the harpoon and lance. The harpoon is an instrument of iron, about three feet in length, terminating in an arrow-shaped head, the two branches of which have internally a smaller reversed barb, resembling the beard of a fish-hook. When this instrument is forced, by a blow, into the fat of a whale, and the line is held tight, the principal barbs seize the strong ligamentous fibres of the blubber, and prevent it from being withdrawn. The lance is a spear of iron, six feet in length, terminating in a head of steel, made very thin and exceedingly sharp, seven or eight inches in length and two or two and a half in breadth. These two instruments, together with lines, boats and oars, form all the necessary apparatus for capturing the whale. Considerable address is requisite to approach sufficiently near to the animal during its short stay at the surface; but when this has been accomplished, the hardy fisher rows directly upon it, and, an instant before the boat touches, buries the harpoon in its back. But if, while the boat is at a little distance, the whale should indicate his intention of diving, the harpoon is thrown from the hand; and when this is done skilfully, it is efficient at the distance of eight or ten yards. The wounded whale makes a convulsive effort to escape. Then is the moment of danger; and both boat and men are exposed to destruction from the violent blows of its ponderous tail. The animal immediately sinks under water: after this it usually pursues its course directly downwards towards the bottom of the sea. The utmost care and attention are requisite, on the part of every person in the boat, while the lines are running out; fatal consequences having been sometimes produced by the most trifling neglect. When the line happens to run foul, and cannot be cleared on the instant, it sometimes draws the boat under water. The average stay under water of a wounded whale, which steadily descends after being struck, is about thirty minutes. The greater the velocity, the more considerable the distance to which it descends, and the longer the time it remains under water, so much greater in proportion is its exhaustion and the facility of accomplishing its capture. Whenever it re-appears, the assisting boats make for the place with their utmost speed; and, as they reach it, each harpooner plunges his harpoon into its back, to the number of three, four, or more, according to the size of the whale and the nature of the situation. Most frequently, however, the whale descends, for a few minutes, after receiving the second harpoon, and obliges the other boats to await its return to the surface, before any further attack can be made. It is afterwards actively plied with lances, which are thrust into its body, aiming at the vitals. At length, exhausted by numerous wounds and the loss of blood, the huge animal indicates the approach of death by discharging from the blow-holes a mixture of blood along with the air and mucus which it usually expires, and, finally, jets of blood alone. The sea, to a great extent round, is dyed with its blood; and the ice, boats and men are sometimes drenched with it. Its final capture is sometimes preceded by a convulsive struggle, in which the tail, reared, whirled, and violently jerked in the air, resounds to the distance of miles. In dying, it turns upon its back or its side. Thus ends this remarkable contest between human ingenuity and brute force, in which man seems to be chiefly indebted for success to his own apparent insignificance, to the animal exhausting itself by its own efforts, and to the necessity it is under of coming to the surface to breathe. The remarkable exhaustion observed in a wounded whale, on its reappearance at the surface, is the effect of the almost incredible pressure to which the animal must have been exposed at the depth of seven or eight hundred fathoms—a pressure on the surface of its body exceeding 200,000 tons, and which is sufficient to force the water through the pores of the hardest wood.

For a full account of the whale, as well as of the various modes of fishing in pack, field, or bay ice, &c., and of the subsequent operations upon the dead body, we must refer to the work of Scoresby, where the reader will find the most certain information on this subject, so far, at least, as the business is carried on in the Polar seas.

The various uses to which the different parts of the whale are applied, are too numerous for insertion here: suffice it to say, the whale fishery forms an important branch of commerce, and, indeed, seems almost indispensable to the existence of some northern tribes.

The razor-back (*B. physalus*) is probably the most powerful and bulky of its tribe, and consequently of the whole animal creation. It is readily distinguished from the preceding by the presence of a dorsal fin; its form is less cylindrical, the body proportionably longer, the whalebone shorter, its breathing or blowing more violent, and its speed greater. The length is about one hundred feet, and its greatest circumference thirty or thirty-five. Its blowing in calm weather may be heard at the distance of a mile. Its greatest speed is about twelve miles an hour. It is by no means a timid animal; aud when closely pursued does not attempt to outstrip the boat, but merely endeavours to avoid it by diving or changing its direction. If harpooned or otherways wounded, it then exerts all its energies, and escapes with its utmost velocity, but shows little disposition to retaliate on its enemies. It seldom lies quietly on the surface of the water while blowing, but usually has a velocity of four or five miles an hour, and, when it descends, very rarely throws its tail into the air, which is a very general practice with the common whale. Its great speed and activity render it a difficult and dangerous object of attack, while the small quantity of inferior oil it affords makes it unworthy the general attention of the fishers. When struck it frequently drags the fast-boat with such speed through the water, that it is liable to be carried immediately beyond the reach of assistance, and soon out of sight of both boats and ship. It has been known to dive obliquely with such velocity that 480 fathoms, or more than half a mile, of line were withdrawn from the boat in about a minute of time. The head is small, compared with that of the common whale; the fins long and narrow; the tail about twelve feet broad; the whalebone about four feet in length, thick, bristly, and narrow; the blubber six or eight inches thick, of indifferent quality; the colour bluish-black on the back, and bluish-gray on the belly; the skin smooth, excepting on the sides of the thorax, where are some remarkable longitudinal folds. The *physalus* occurs, in great numbers in the Arctic seas, especially along the edge of the ice between Cherie island and Nova Zembla, and also near Jan Mayen. It is seldom seen among much ice, and seems to be avoided by the common whale; and, consequently, the whale fishers view its appearance with concern.

The cachalot or spermaceti whale (*physeter macrocephalus*) differs from the above-mentioned animals in many important particulars. The mouth is entirely destitute of whalebone, and the lower jaw is armed, on each side, with a row of about twenty thick, conical teeth, which fit into corresponding depressions in the upper jaw. The blow-hole is single, not symmetrical, but directed towards the left side, and placed at the extremity of the upper part of the snout. The left eye is also smaller than the other. The head is of enormous size, terminated abruptly in front; but the lower jaw is very long and narrow. The upper part of the head is composed of large cavities, separated by cartilaginous partitions, filled with an oil which condenses and crystallizes on cooling, forming the well-known substance called *spermaceti*. This is the principal object of the fishery; for their body does not yield a great proportion of blubber. The spermaceti whale is found in all seas, but most abundantly in the Pacific. It is gregarious; and herds are frequently seen containing two hundred or more individuals. Such herds, with the exception of two or three old males, are composed of females, who appear to be under the direction of the males. The males are distinguished by the whalers, as "bulls," and the females they call "cows." The bulls attack with great violence, and inflict dreadful injuries upon other males of the species which attempt to join the herd. Whenever a number of them are seen, four boats, each provided with two or three lines, two harpoons, four lances, and a crew of six men, proceed in pursuit, and if possible, each boat fastens to a distinct animal, and each crew kill their own. When one is struck out of a herd, it commonly takes the lead, and is followed by the rest. It seldom descends far under water, but generally swims off with great rapidity, stopping after a short course, so that the boat can be drawn up to it by the line, or be rowed sufficiently near to lance it. In the agonies of death, the struggles of the animal are tremendous: the surface of the ocean is lashed into foam by the motions of its tail; and the boats are kept aloof, lest they should be dashed to pieces. When a herd is attacked in this way, ten or twelve of the number are often killed: those which have been only wounded are rarely captured. The separation of the blubber or "flensing," is sometimes done differently from the manner used in polar whaling. A strap of blubber is cut in a spiral direction, and, being raised by tackles, turns the animal round, as on an axis, until nearly all the blubber is stripped off.

WHALE FISHERY. The Biscayans were the first people who prosecuted the whale fishery as a regular commercial pursuit. They carried it on with great vigour in the twelfth, thirteenth, and fourteenth centuries. The whales taken by them, were not, however, so large as those taken in the polar seas, and were not very productive of oil; but their flesh was used for food, and the whalebone, which sold at a very high price, was applied to various useful purposes. The failure of whales in the Bay of Biscay put an end to this fishery. The voyages of the English and Dutch to the Northern ocean, in search of a passage to India, laid open the haunts of the whale; and vessels were fitted out by those nations, the harpooners and part of the crew being Biscayans. The numbers of whales were here so great, and the capture so easy, that many were killed and abandoned merely from the ships being full. It was the practice of these times to boil the blubber on shore in the north, and to fetch home only the oil and whalebone; and the Dutch constructed a considerable village on the northern shore of Spitzbergen, which they called *Smeerenberg* (from *smeeren*, to melt, and *berg*), and which, during the busy season, abounded with shops, inns, &c. The Dutch acquired a decided superiority over their competitors in the fishery; and such was the quantity of oil procured, that ships were sent out in ballast to assist in bringing home the produce. Whales soon became scarce about Spitzbergen, taking to the deep ocean, and to the Greenland seas; and it became usual to send the blubber direct to Holland. The fishery had at first (1614) been granted to an exclusive company, but was thrown open in 1642: from which time it was carried on to the greatest extent, and to the most advantage. The private ships sent out by the Dutch were fitted out on a principle that secured economy and vigilance on all sides. The hull of the vessel was furnished by an individual, who commonly took upon himself the command; a sail-maker supplied the sails, a cooper the casks, &c. The parties engaged as adventurers: each person shared in the profits according to his proportion of the outfit, and the crew was hired on the same principle. In its most flourishing state (about 1680), the Dutch whale fishery employed about 260 ships and 14,000 sailors. The wars of the end of the eighteenth and beginning of the nineteenth centuries annihilated this branch of Dutch industry, and, in 1828, only one ship sailed from Holland.

The English whale fishery was at first carried on by exclusive companies, but with little success. In 1732, a bounty of twenty shillings a ton to every ship of more than two hundred tons' burthen engaged in the fishery, was granted by parliament, which, in 1749, was raised to forty shillings, and continued, with some variations, (being finally reduced, in 1795, to twenty shillings), till 1824, when it ceased. The total amount of bounties paid from 1750, to 1824, has been estimated at about £2,500,000; but the success of British whalers, even with this advantage is to be attributed principally to the decline of the Dutch fishery. In 1815, there were 134 British ships, with 5800 seamen, engaged in the northern whale fishery, and about thirty ships, with 800 men, in the southern. In 1821, when the number was greatest, there were 142 ships, of 44,864 tons, and with 6074 men engaged in the northern fishery; in 1824, 120 ships, of 35,194 tons, and 4867 men: immediately after the repeal of the bounty, the number fell off at once, and, in 1829, it amounted only to eighty-nine, of 28,812 tons. The season of 1830, was one of the most disastrous ever known since the commencement of the fishery. Of the ninety-one vessels which sailed, nineteen were entirely lost; as many more returned clean, or without a single fish; seventeen brought only one fish each; and of the others, many had only two or three. The actual loss incurred from the shipwrecks, and the severe injuries sustained by twelve other vessels, is calculated to have amounted to about £143,000. Both oil and whalebone immediately rose to more than double their former price; but still the whole produce of the fishery of this year did not amount, according to the highest estimate, to more than £155,565; while that of 1829 was reckoned at £376,150. The season of 1831 was also unfortunate, though not to the same extent; three of the vessels having suffered shipwreck. The produce as compared with that of the preceding year was, in oil 4800 tons in place of 2205, and of bone 230 tons in place of 119. But in 1829 there had been obtained 10,672 tons of oil, and 607 tons of bone; and in 1828, of oil 13,966 tons, and of bone 802 tons. The value of the whole produce of the fishery of 1831, when oil had fallen from £50 to £30, and whalebone from £380 to £200, was estimated only at £190,000. The season of 1832 was considered prosperous.

The locality of the northern fishery has entirely changed since the first expeditions. The seas between Spitzbergen and Greenland have been entirely abandoned by the whalers, who now resort to Baffin's bay and Davis's strait, or the coast of West Greenland. The Dutch first began to frequent Davis's straits in 1719; but it was quite recently that the British first followed their example. Even so late as 1820, the fishery in the Greenland seas was the most considerable; but within a few years it has been almost entirely deserted. Of ninety-one ships, fitted out in 1830, only four were for Greenland. The discoveries made in the northern waters, by the British exploring voyages (see *North Polar Expeditions*), have made the fishers acquainted with several new and advantageous situations for the prosecution of their business. The sea in Davis's straits is less incommoded with field ice than the Greenland and Spitzbergen seas; but it abounds with icebergs, and the fishery is more dangerous.

France has, of late years, had little share in the whale fishery. In 1784, Louis XVI. fitted out six ships, on his own account, which were furnished with harpooners, and a number of seamen from Nantucket. In 1790, there were about forty French ships employed in the fishery, which was destroyed by the wars of the French revolution. Since the peace, the government has attempted to revive it, but with little success.

The whale fishery has been carried on with greater vigour and success from the United States of America, than from any other country. It was begun by the colonists on their own shores at a very early period; but, the whale having abandoned them, the American navigators entered with extraordinary ardour into the fisheries in the Northern and Southern oceans, from about the middle of the eighteenth century. From 1771 to 1775, Massachusetts employed annually 183 vessels, of 13,820 tons in the northern, and 121 vessels, of 14,026 tons, in the southern fishery. These were the first to prosecute the fishery in the southern Atlantic, on the coasts of Africa and Brazil, and led the way into the Pacific seas. "Look at the manner," says Burke (1774,) "in which the New England people carry on the whale fishery. While we follow them among the tumbling mountains of ice, and behold them penetrating into the deepest frozen recesses of Hudson's bay and Davis's straits; while we are looking for them beneath the arctic circle, we hear that they have pierced into the opposite region of polar cold; that they are at the antipodes, and engaged under the frozen Serpent of the South. Falkland island, which seemed too remote and too romantic an object for the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the accumulated winter of both the poles. We learn that, while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude, and pursue their gigantic game along the coast of Brazil." These are the seas that are still vexed by the American fisheries, which have been pushed, however, into higher southern latitudes than had ever before been visited, and are carried on from the shores of Japan to the icy rocks of New South Shetland. (See *South Polar Islands.*)* They have been principally carried on from Nantucket and New Bedford, and have proved very lucrative. At present, they are also prosecuted with great success from several other places. One class of ships is fitted out for the Pacific in pursuit of the spermaceti whale. These are from 300 to 500 tons' burthen, carrying from twenty-five to thirty men, and are absent about thirty to thirty-six months. Their number is about 170, of about 62,000 tons, and carrying nearly 5000 men. Another class sail to the coasts of Africa and Brazil, in search of the common or right whale. They average about 325 tons each, carry about twenty-five men, and are absent eight to twelve months. The whole amount of tonnage of this class is about 40,000; number of seamen engaged, 3000. The quantity of sperm oil brought home in 1815, was 3944 barrels; in 1820, 34,700; in 1825, 62,240, and, in 1830, 106,800. The quantity of whale or black oil brought in in 1830, was about 115,000 barrels; of whalebone, about 120,000 pounds. The sperm oil is chiefly used at home; and 2,500,000 pounds of sperm candles are made, employing about thirty manufactories. The whale oil and whalebone are chiefly exported to Europe. See an article in the Foreign Quarterly Review (No. 14), by J. R. MacCulloch, and Scoresby's *Voyage to the Northern Whale Fishery* (Edinburgh, 1823), and his *Arctic Regions.*

WHALEBONE; a substance of the nature of horn, adhering, in thin parallel plates, to the upper jaw of the whale. These laminæ vary, in size, from three to twelve feet in length; the breadth of the largest, at the thick end, where they are attached to the jaw, is about a foot. They are extremely elastic. All above six feet in length is called size *bone.*

WHARTON, THOMAS, marquis of, an English statesman, was one of the first persons of distinction who joined William III. on his arrival in England, and by that prince was made a privy counsellor and justice in Eyre, south of the Trent. Queen Anne created him earl of Wharton; and in 1708, he was sent as viceroy to Ireland; but the following year he resigned all his employments. Being a zealous whig and firm supporter of the Hanoverian succession, he was favoured by George I., who raised him to the rank of marquis. He died in 1715.

WHARTON, PHILIP, duke of, son of the preceding, was born in 1699. He displayed, when quite young, talents which attracted notice; and, having been educated under domestic tutors, at the age of fourteen he married clandestinely, to the great disappointment of his father, whose death shortly after left him at liberty to follow his own inclinations. In 1716, he set out on his travels, for the purpose of finishing his studies at Geneva. But, disgusted with the sober manners of that place, he left his governor there, and went to Lyons, and afterwards to the court of the Pretender at Avignon. That prince, highly gratified by his attentions, gave him the title of duke of Northumberland. About the end of 1716, he returned to England, and thence proceeding to Ireland, where he possessed a peerage, he was allowed to take his seat in the Irish house of peers. He then displayed the versatility of his character by defending, with all the powers of reasoning and eloquence, the established government; in consequence of which he obtained a dukedom. On attaining the age of majority, he made his appearance in the English parliament, where he pursued a line of political conduct diametrically opposite to that which he had lately exhibited; distinguishing himself as the warm defender of bishop Atterbury, impeached as an adherent to the house of Stuart. He also published a virulent opposition paper, called the True Briton. Having impoverished himself by extravagance, his estates were, by a decree in chancery, vested in the hands of trustees; and he retired to the continent, and visited Vienna and Madrid. After practising new intrigues, deceiving, by the levity of his conduct, the Spanish court, and the chevalier de St George, and rendering himself contemptible alike to all parties, he deprived himself of all his resources, by rejecting an offer of restoration to his title and estate, made him by Sir Robert Walpole. Overwhelmed with debts, he went to Paris, where he lived for some time meanly and disreputably. At length he returned to Spain, and, ruined in health as well as in fortune, he was proceeding towards a mineral spring in Catalonia, when he died at a small village, in 1731. Towards the close of his life, he engaged in writing a tragedy on the story of Mary, queen of Scots. His poems, speeches, and letters, with his life prefixed, were published in 1731, in two volumes, octavo.

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* The seas visited by the Americans are, in many parts, little known; the currents are uncertain, and the seamen have had to construct their own maps and charts. Yet shipwrecks have been rare. Two men are always kept at the mast-head on the look-out for land or breakers.

WHEAT (*triticum sativum*). Among the different kinds of grain which form the principal nutriment of the civilized world, and to the culture of which civilization is even attributed, by ancient and modern writers, the first rank is universally conceded to wheat. It is now cultivated in almost all temperate climates, throughout the greater part of Europe, in all the provinces of China, in Natolia, Syria, Persia, and the other temperate parts of Asia, in the north of Africa, and at the cape of Good Hope, in the United States, and even in the extreme southern parts of South America. The plant belongs to the family of the grasses, like the other *cerealia*. The spikelets of the flowers are sessile, and disposed on two opposite sides of an axis, the whole forming a terminal spike or ear, which, in one variety, is even branched. The culture of wheat, from time immemorial, and in different soils and climates, has produced numerous varieties, which, in some instances, have even been mistaken for distinct species. Winter wheat, sown in the spring, will ripen the following summer, though the produce of succeeding generations of spring-sown wheat is found to ripen better. White, red, awned and beardless wheat change and run into each other in different soils and climates; and even the Egyptian wheat is known to change into the single-spiked common plant. The most permanent varieties are the red and white grained, and the spring wheat, which is generally red. Wheat succeeds best when treated as a biennial, though it does not remain above one year in the ground. Provided the soil be well prepared and dry, and the grain sown in time, the plants do not suffer from the greatest cold, especially if the ground be covered with show. Animal substances are the best manure for wheat, as containing much gluten, a substance found in a greater proportion in this grain than in any other; and next in importance is lime, as tending to the same effect by chemical combinations. Wheat yields a greater proportion of flour than any other grain, and is also more nutritive. Gluten is so essential an ingredient in bread, that fermentation cannot go on without it; hence its inferiority in wet seasons, and when the wheat is blighted or ill ripened; and hence the advantage of having a stock of old grain. Wheat starch is made by steeping it, and afterwards beating it in hempen bags. The mucilage, being thus mixed with the water, produces the acetous fermentation, and the weak acid thus formed renders the mucilage white. After settling, the precipitate is repeatedly washed, and then put in square cakes for drying. The straw of wheat, from dry, chalky lands, is manufactured into hats. Leghorn hats are made from a bearded variety of wheat, not unlike rye, raised on poor, sandy soils, on the banks of the Arno between Leghorn and Florence, expressly for this manufacture. It does not grow above eighteen inches in length, is pulled green, and bleached, like flax, on the gravelly bed of the river. The straws are not split, which renders the plait tougher and more durable. (See *Straw*.) We are ignorant of the country whence this valuable grain was first derived; but it was very early cultivated in Sicily. —Spelt (*T. Spelta*) appears to be a distinct species, and more hardy than common wheat. It has a stout straw, almost solid, with strong spikes, and chaff adhering firmly to the grain. The grain is light, yields but little flour, and makes but indifferent bread. It is raised in Switzerland, in elevated situations, where common wheat would not ripen; and also in Bavaria and other parts of Germany.

WHEEL, Persian, in agriculture. No arable culture is carried on in Persia without artificial watering, and various modes are adopted for raising the element from wells and rivers for this purpose. The Persian wheel is well known, and is of the most simple construction. A great improvement of this wheel has been made at Blair-Drummond. The moss of Kincardine or Blair-Drummond is situated in the parish of that name not far from Stirling, and contains upwards of 2000 acres, 1500 of which belong to the estate of Blair-Drummond It lies upon a bed of clay, which is a continuation of the rich alluvial soil which forms the flat vales called *Carses* of Stirling and Falkirk. This vale or plain had been covered with trees, which appear to have been felled by the Romans, and this, by stagnating the water, ended in producing the moss. Lord Kaimes took possession of this moss in 1766, and, soon after, conceived the idea of floating off the moss into the Frith of Forth, and exposing the alluvial soil for corn culture.

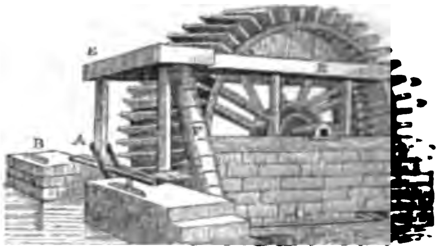
A stream of water sufficient to turn a common corn-mill will carry off as much moss as twenty men can throw into it, provided they be stationed at the distance of 100 yards, from each other. The first step is to make in the clay, alongside of the moss, a drain to convey the water; and, for this operation, the Carse clay below the moss is peculiarly favourable, being perfectly free from stones and all other extraneous substances; and at the same time, when moist, as slippery as soap, so that not only is it easily dug, but its lubricity greatly facilitates the progress of the water when loaded with moss. The dimensions proper for the drain are found to be, two feet for the breadth, and the same for the depth. If smaller, it could not conveniently receive the spadefuls of moss; if larger, the water would escape, leaving the moss behind. The drain has an inclination of one foot in a hundred yards: the more regularly this inclination is observed throughout, the less will the moss be liable to obstructions in its progress with the water. The drain being formed, the operator marks off to a convenient extent, alongside of it, a section of moss ten feet broad; the greatest distance from which he can heave his spadeful into the drain. This he repeatedly does, till the entire moss be removed down to the clay. He then digs a new drain at the foot of the moss bank, turns the water into it, and proceeds as before, leaving the moss to pursue its course into the river Forth; upon the fortunate situation of which, happily forming for several miles the southern boundary of the estate, without the interposition of any other property, depended in some measure the very existence of the whole operations.

To procure water for floating off the moss was found to be the greatest difficulty; but it was readily overcome by Mr Whitworth, an eminent engineer, and Mr George Meikle, of Alloa, a skilful millwright, the son of the well known inventor of the thrashing-machine. Mr Meikle gave a model of a wheel of his own and his father's invention, of an entirely new construction. This wheel is so exceedingly simple, and acts in a manner so easy, natural, and uniform, that a common observer is apt to undervalue the invention; but persons skilled in mechanics view machinery with a very different eye, for to them simplicity is the first recommendation a machine can possess. Accordingly, upon seeing the model set to work, Mr Whitworth, with that candour and liberality of mind which generally accompany genius and knowledge, not only gave it the greatest praise, but declared that, for the purpose required, it was superior to what had been recommended by himself, and advised it to be adopted without hesitation.

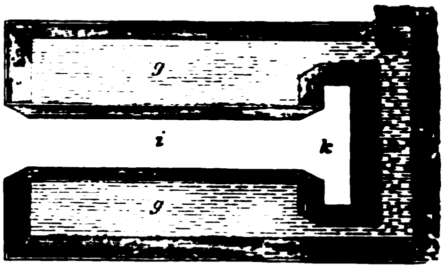
The water-wheel at Blair-Drummond is twenty-eight feet in diameter and ten feet broad. It is driven by water operating on the float-boards, in the same way as an ordinary mill-water. At the extremities of the radii, or arms, of the wheel, immediately within the float-boards and circumference, is fixed a double row of buckets, as they have been called, borrowing a word from the Persian wheel, to which the part of the present machine has no resemblance, which are more like a section of Louvre boards, or Venetian blinds, or a set of scales, opening upwards when at the bottom of the circumference, and downwards when at the top. These receive two streams of water, which are poured into them within the circumference, when below, which water they discharge when they ascend, and are inverted by the revolution of the wheel into a trough or cistern so placed as to receive it above. By this means a level is gained of seventeen feet, which is sufficient to make the water run to the surface of the moss. The water is conveyed from the cistern of the wheel to the moss for 354 yards below ground, in wooden pipes hooped with iron, eighteen inches in diameter within; and afterwards rises from the pipes into an open aqueduct above 1400 yards in length, and elevated from eight to ten feet above the level of the adjacent grounds.

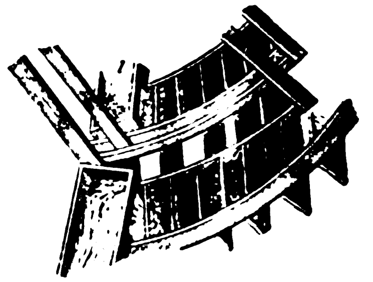
The wheel makes nearly four revolutions in a minute, in which time it discharges into the cistern forty hogsheads of water, and it is capable of lifting no less than sixty hogsheads in a minute; but the pipes will not admit such a quantity of water, nor would it be safe or expedient to drive the machine with a force sufficient to raise so great a quantity. It is probable that the first idea of this machine was derived from the Persian wheel; but its superiority in many respects is so conspicuous as to entitle it to little less praise than the first invention. The wheel was completed and at work in October, 1827, and the total expense exceeded £1000. It has been twice rebuilt. The tenants voluntarily agreed to pay interest on whatever sum it might cost; but their generous landlord relieved them at once from their engagement.

The details of the Blair-Drummond wheel are thus given in the *Farmer's Magazine*, vol. xviii. A is a sluice through which is admitted the water that moves the wheel; B, two sluices through which is admitted the water raised by the wheel; C, a part of one of two wooden troughs and an aperture in the wall, through which the above water is conveyed into the buckets; the other trough is hid by two stone walls that support the wheel; DD, buckets, of which eighty are arranged on each side of the arms of the wheel, in all 160; EE, a cistern, into which the water raised by the buckets is discharged; F, wooden barrel pipes, through which the water descends from the cistern under ground



The cistern of the Blair-Drummond wheel, as seen from above, shows the two troughs into which the buckets empty themselves *g g*; the space through which the water flows to the barrel pipes *h*; the place where the arms of the wheel move *i*, and where the float boards and buckets descend *k*





The buckets are filled from two side troughs *l*, which communicate with the head of water which drives the wheel, as seen at E in the first figure.

WHEEL AND AXLE. See *Mechanics*.

WHEEL-WORK. When an end to be accomplished, in mechanics, cannot be attained with convenience by the simple wheel and axle (see *Mechanics*), it frequently becomes necessary to transmit the effect of the power to the resistance, through a system of wheels and axles acting upon each other. As the wheel and axle is only a modification of the lever, so a system of such machines, acting one upon another, is only another form of the compound lever. In complex wheel-work, the power is applied to the circumference of the first wheel, which transmits its effect to the circumference of the second wheel, which again transfers the effect to the circumference of the second axle, which acts upon the circumference of the third wheel, and this, in the same way, transmits the effect to the circumference of the third axle, and thus the transmission of the force is continued until it has arrived at the circumference of the last axle, to which the weight or resistance is applied. In light work, where the pressure on the machinery is not very considerable, the wheels and axles are allowed to work by the friction of their surfaces, which is increased by cutting the wood so that the grains of the surfaces in contact shall run in opposite directions; also by gluing upon the surfaces of the wheels and axles buffed leather. There are other ways of transmitting the force of each axle to the circumference of the succeeding wheel. A very common method is, by ropes, straps, bands, or belts, round the circumference of the wheel and axle, which act upon each other. The action is in this manner transmitted by the tension of the rope or strap, and rendered effective by friction with the circumferences on which it is rolled. Wheels and axles connected in this manner are called *band-wheels*. When the wheel and axle from which it receives motion, are intended to revolve in the same direction, the band is not crossed, but simply passed round them in the shortest manner; but, when the wheel is to revolve in a direction contrary to the revolution of the axle, the strap is crossed between them. This latter method of applying the strap, has the advantage of having more surface to act upon, and, therefore, having more friction; but the most usual way of transmitting the action of the axles to the succeeding wheels, is by means of teeth or cogs, raised on their surfaces. When this is the case, the cogs on the wheels are generally called *teeth*, and those on the surface of the axle are called *leaves*. The axle itself, in this case, is called a *pinion*. The connexion of one toothed wheel with another, in this manner, is called *gear* or *gearing*. The teeth of the wheel, instead of working in the leaves of a pinion, are sometimes made to act upon a form of wheel called a *lantern*, with cylindrical teeth or bars, called *trundles* or *spindles*. Wheels are denominated *spur*, *crown*, or *bevel-gear*, according to the direction or position of the teeth. If the teeth are perpendicular to the axis of the wheel, and in the direction of its radii, it is called a *spur-wheel*. If the teeth are parallel to the axis of the wheel, and therefore perpendicular to its plane, it is called a *crown-wheel*. Two spur-wheels, or a spur-wheel and pinion which work in one another, are always in the same plane, and have their axes parallel; but, when a spur and crown-wheel are in connexion, their planes and axes are at right angles. By this means, therefore, rotatory motion may be transferred from a horizontal to a vertical plane, or *vice versa*. When the teeth are oblique to the plane or axis-wheel, it is a called a *bevelled wheel*. In this case, the surfaces on which the teeth are raised, are parts of the surfaces of two cones. The use of the bevelled wheels is to produce a rotatory motion round one axis, by means of a rotatory motion round another which is oblique to it; and, provided that the two axes are in the same plane, this may always be accomplished by two bevelled wheels.

WHEELS, Wheel Carriages. See *Locomotion*.

WHEELS, Water. See *Hydraulics*.

WHEELER, Sir George, a learned traveller, was born in 1650, and, in 1667, became a commoner of Lincoln hall, Oxford, on leaving which he travelled into Greece and Asia, in company with doctor Spon of Lyons, their primary object being to copy inscriptions and describe antiquities. On his return, he presented to the university of Oxford a valuable collection of Greek and Latin manuscripts. In [illegible], he took orders, obtained a prebend in the church of Durham, and was presented to the rich rectory of Houghton-le-Spring. He was created doctor of divinity in 1702, and died in February, 1724. In 1682, he published an account of his journey into Greece, in the company of doctor Spon, in six books, folio, which is highly valued for its authenticity and information, interesting to the medallist, antiquary, and student of natural history.

WHERRY. See *Boat*.

WHET SLATE. See *Slate*.

WHEY. See *Milk*.

WHIGS AND TORIES. We have already given Defoe's account of the origin of the latter nickname, under the head *Tories*. "As to the word *whig*," says the same writer, "it is Scotch. The use of it began then when the western men, called *Cameronians*, took arms, frequently, for their religion. *Whig* was a word used, in those parts, for a kind of liquor the western Highlandmen used to drink, whose composition I do not remember,* and so became common to the people who drank it. It afterwards became a denomination of the poor, harassed people of that part of the country, who, being unmercifully persecuted by the government against all law and justice, thought they had a civil right to their religious liberties, and therefore resisted the power of the prince (Charles II.). They took arms about 1681, being the famous insurrection of Bothwell bridge. The duke of Monmouth, then in favour here, was sent against them by Charles, and defeated them. At his return, instead of thanks for his good service, he found himself ill treated for having used them too mercifully; and duke Lauderdale told king Charles, with an oath, that the duke had been so civil to the whigs because he was a whig himself in his heart. This made it a court word, and, in a little time, the friends and followers of the duke began to be called *whigs*, and they, as the other party did by the word *tory*, took it freely enough to themselves." (Defoe's *Review*, vii.).

Such was the origin of these celebrated party names, which have continued during the space of 150 years, to be borne by two great divisions of the English aristocracy, and which, at least at many periods, rather deserve the name of factions than of parties. But the origin of the parties themselves was much earlier, and the line of distinction was strongly drawn in the reign of James I., when the long struggle between the crown and the parliament commenced. The court and country parties, the roundheads and cavaliers, the commonwealth's men or republicans and the partizans of absolute power, naturally arose from the mixed character and undefined nature of the English constitution, and the peculiar circumstances in which it was placed by the arbitrary maxims and acts of the Stuarts, and the growing wealth and intelligence of the community. After the dissolution of the monarchy, and its subsequent restoration, a new feature appeared in the principles of its partisans—the doctrine of passive obedience and indefeasible right, which may be considered the true characteristic of the tory, at one period of history. The bigotry and tyranny of James II united all parties against him; and the 'glorious revolution' of 1688 was effected by the combined efforts of the whole nation. "The whigs," says Hume, "suitably to their ancient principles of liberty, which had led them to attempt the exclusion bill, easily agreed to oppose a king whose conduct had justified whatever his worst enemies had prognosticated concerning his succession. The tories and the church party, finding their past services forgotten, their rights invaded, their religion threatened, agreed to drop, for the present, all overstrained doctrines of submission, and attend to the great and powerful dictates of nature. The nonconformists, dreading the caresses of known and inveterate enemies, deemed the offers of toleration more secure from a prince educated in those principles, and accustomed to that practice; and thus all faction was, for a time, laid asleep in England; and rival parties, forgetting their animosity, had secretly concurred in a design of resisting their unhappy and misguided sovereign." During the reign of William (1688—1702), the parties were not, therefore, so distinctly divided as they had been previously, and have been subsequently. The impeachment of Sacheverell, during the reign of queen Anne, again brought the two theories of government, which formed the original distinction between the whigs and tories, into collision, and, combined with some bed-chamber intrigues and court quarrels, resulted in the appointment of a tory ministry, at the head of which were Bolingbroke and Oxford. On the accession of the house of Hanover (1714), the scale was again changed, and the whole power was now thrown into the hands of the whigs. See *George I.* and *II.* and *Walpole;* on the origin and early character and history of these parties, see Rapin's *Dissertation on the Whigs and Tories*, and Bolingbroke's *Dissertation upon Parties.*

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* Burnet (Memoirs of his own Times) says, that the word *whiggam*, used by the western Scotchmen in driving their horses, was the origin of the term *whig* applied to them. Others, with Defoe, derive it from the Scotch word *whig*, or *wigg*, signifying *whey*. Jamieson (Dictionary of the Scotch Language) does not venture to decide.

The following remarks from a celebrated whig journal (Edinburgh Review, vol. xxxvii. p. 21—25) will show the state of parties at that critical period. "The accession of the house of Hanover divided England into two parties, the whigs, or friends of the new establishment, and the tories and Jacobites, its secret or avowed opponents. The tories, bigoted to the notion of indefeasible right in the succession to the crown, but apprehensive for their religion if a papist should mount the throne, were distracted between their scruples about the validity of a parliamentary settlement and their fears lest, in subverting it, they might restore, or pave the way for the restoration of the Catholic church. Though deterred by their religious fears, from embarking decidedly in the cause of the Pretender, they kept on terms with his friends, and were not unwilling to disturb, though they hesitated to overturn, a government they disliked, because it was founded on principles they abhorred. The Jacobites, though most of them were zealous members of the church of England, had a stronger infusion of bigotry in their composition, and were ready to restore a popish family, and submit to a popish sovereign, rather than own a government founded on a parliamentary title. It was impossible that either tories or Jacobites should have the confidence of the Hanoverian princes; and, therefore, while those divisions subsisted, all places of power and profit were in the hands of the whigs. Of these two parties, the tories and Jacobites were the most numerous. They included a certain number of the ancient nobility, and comprehended a very large proportion of the landed interest, and, what gave them a prodigious influence in those days, a vast majority of the parochial clergy. The strength of the whigs lay in the great aristocra in the corporations, and in the trading and money interests. The dissenters, who held popery in a horrence, and dreaded the overbearing spirit of t church, were warmly attached to a government th protected their religious liberty, and, as far as durst, extended to them every civil right. It h perhaps, been fortunate in its results for Englan that her church was for so many years in hostili to her government. It was during this tempora dissolution of the vaunted alliance between chur and state, that religious freedom, such as it exis among us, struck so deep and vigorous a root as t withstand every subsequent effort to blighten o subvert it. It was during this period that the a nual indemnity bills were introduced, which thoug they have left the stigma, have taken from the te act its sting: and it was during the same peri that the toleration act received, in practice, th liberal interpretation which extends its benefits t every possible sect of Christians, the unhappy C tholics alone excepted. This protracted strug between the adherents of the house of Hanover an the partisans of the Stuarts, was not, however, u attended with disadvantages. It confounded for time, the ancient distinctions of whig and tor which had turned on constitutional differences real and eternal importance, and converted two p litical sects, or parties, into two factions contendin for the crown. The tories, forced to remain in op position to the government, learned to ape the la guage, and ended by adopting many of the opinion of their adversaries. The whigs, believing th preservation of their liberties depended on th maintenance of the parliamentary settlement of th crown, and finding themselves in a minority in th country, were constrained to employ measures an sanction proceedings from which their ancestor would have recoiled. To counteract the local in fluence of the gentry, they practised and encourag corruption, both within parliament and without, an thus turned against their enemies the weapon they had invented under the Stuarts. To suppress tu mults of the rabble, instigated by the vehicles o tory sentiment, annually exported from Oxford, an dispersed over the kingdom, they armed the magis trates with additional, and, till then, unknown pow ers; and, to defeat the enterprises of foreign princ acting in conjunction with the disaffected at hom they maintained a standing army in time of peace." The riot act was passed, the triennial act repealed, and the habeas corpus act suspended by the whigs, on the accession of the house of Hanover, and a shameless system of corruption and laxity of politica principle introduced, the whole extent of which has but recently been fully exposed to public view. Walpole was finally compelled to retire, by the united opposition of a party of disaffected whigs, acting under lord Carteret (afterwards Granville and Mr Pulteney, the tories led by Wyndham, and the Jacobites by Shippen, who, Walpole used to say, was the only man whose price he did not know. The whigs still retained their power; and, after some changes, the Pelham administration was formed, in 1743, by the nomination of Henry Pelham to the place of first lord of the treasury. "A more inglorious period of our annals," says the writer last quoted, "is scarce to be found, than from this year to the peace of Aix-la-Chapelle (1748)—defeats and disasters abroad, rebellion (that of 1745) and discontent at home, no concert or activity in the government—the king thwarting inisters at every step, and openly giving his tance to their enemies—his ministers occu- d with their mutual jealousies and hatreds, ne- ing the business of the nation, and, at length, the midst of a rebellion which had grown to a table height from their supineness and incapa- , resigning, in a body (Feb., 1746), to force Mr into office, whom they equally feared and d." The death of Mr Pelham, in 1754, was wed by new dissensions and political in- es—a mere scramble for office—terminated by formation of the Pitt (see *Chatham*) and New- le (brother of Pelham) administration, in 1757. ministry, which was forced upon the king, in ct opposition to his own wishes, carried Eng- triumphantly through the seven years' war, was dissolved in 1761, on the accession of ge III.—See Walpole's *Memoirs of the last ten of the Reign of George II.* (2 vols., 4to.,); and Coxe's *Memoirs of the Pelham Ad-* tration (2 vols., 4to., 1829).

HIN, in agriculture; a term sometimes applied rse; which, when cut in the sap, and bruised roper way, by flails, or in other modes, makes est green fodder, in winter, for horses. It is seful, in some measure, to sheep stock, as well e bees.

HIPPING. See *Flagellation*.

HIP-POOR-WILL (*caprimulgus vociferus*, n). This remarkable bird arrives in the le States of America, about the close of April e beginning of May, and continues his mi- ns to the centre of Massachusetts. In the ier, it is said to proceed as high as Hud- s bay. It is a nocturnal bird, and continues cry, from which it derives its name, till mid- t, except in moonlight nights. The Whip- -will, when engaged in its nocturnal rambles, is to fly within a few feet of the surface of the , in quest of moths and other insects. During ay, these birds retire into the darkest woods, ly on high grounds, where they pass the time ence and repose, the weakness of their sight elling them to avoid the glare of the light. r food appears to be large moths, beetles, hoppers, ants, and such insects as frequent the of decaying timber. Sometimes, in the dark, will skim within a few feet of a person, mak- low chatter as they pass. They also, in com- with other species, flutter occasionally round tic cattle, to catch the insects which approach s on them; and hence the mistaken notion ir sucking goats.

HIRLIGIG; an instrument of punishment, ntly used in the middle ages, and, in later , on the continent of Europe. In England, it to have been employed chiefly in the army, nish trifling offences, committed by sutlers, , brawling women, and such persons. It is a of circular wooden cage, turning on a pivot, when set in motion, whirling round with such ity that the delinquent becomes extremely The punishment was generally public. This ment is sometimes used in insane hospitals, to me the obstinacy of lunatics.

HIRLPOOL. When two opposite currents, ut equal force, meet, they sometimes, especi- n narrow channels, turn upon a centre, and e a spiral form, giving rise to eddies or whirl- . The most celebrated of these are the Euri- ear the island of Eubœa, in the Grecian ago; Charybdis, in the strait between Sicily and Italy; and the Maelstrom, off the coast of Norway. When agitated by tides or winds, they sometimes become dangerous to navigators.

WHIRLWINDS sometimes arise from winds blowing among lofty and precipitous mountains, the form of which influences their direction, and occasions gusts to descend with a spiral or whirling motion. They are frequently, however, caused by two winds meeting each other at an angle, and then turning upon a centre. When two winds thus encounter one another, any cloud which happens to be between them is, of course, condensed, and turned rapidly round; and all substances, sufficiently light, are carried up into the air by the whirling motion which ensues. The action of a whirlwind at sea occasions the curious phenomenon called a *water-spout*, which is thus described by those who have witnessed it:—From a dense cloud a cone descends, in the form of a trumpet, with the small end downwards: at the same time, the surface of the sea under it is agitated and whirled round, the waters are converted into vapour, and ascend, with a spiral motion, till they unite with the cone proceeding from the cloud: frequently, however, they disperse before the junction is effected. Both columns diminish towards their point of contact, where they are not above three or four feet in diameter. In the middle of the cone forming the water-spout, there is a white transparent tube, which becomes less distinct on approaching it; and it is then discovered to be a vacant space, in which none of the small particles of water ascend; and in this, as well as around the outer edges of the water-spout, large drops of rain precipitate themselves. In calm weather, water-spouts generally preserve the perpendicular in their motion; but when acted on by winds, they move on obliquely. Sometimes they disperse suddenly; at others, they pass rapidly along the surface of the sea, and continue a quarter of an hour or more before they disappear. A notion has been entertained that they are very dangerous to shipping, owing to the descent, at the instant of their breaking, of a large body of water, sufficient to sink a ship; but this does not appear to be the case, for the water descends only in the form of heavy rain. It is true, that small vessels incur a risk of being overset if they carry much sail; because sudden gusts of wind, from all points of the compass, are very common in the vicinity of water-spouts.

WHISKEY, (a corruption of the Gaelic word *usquebaugh*, which, we believe, signifies *water*,) is the name applied to a well-known liquor distilled from barley, and in great repute both in Scotland and Ireland. It may, indeed, be considered the national beverage of both these countries. *Aqua vitæ* (water of life) is its commercial appellation. For an account of its manufacture, see the article *Distillation* in Supplement.

WHIST. The laws of this game, as taken from Hoyle, are as follows.

Of Dealing. 1. If a card is turned up in dealing, the adverse party may call a new deal, if they think proper; but if either of them have been the cause of turning up such card, then the dealer has the option. 2. If a card is faced in the deal, there must be a fresh deal, unless it happens to be the last deal. 3. It is the duty of every person who plays, to see that he has thirteen cards. If any one happens to have only twelve, and does not find it out till several tricks are played, and the rest have their right number, the deal stands good, and the person who played with the twelve cards is to be punished for each revoke, provided he has made any. But if any of the rest of the players should happen to have fourteen cards, in that case the deal is lost. 4. The dealer should leave his trump card upon the table till it is his turn to play; and after he has mixed it with his other cards, no one has a right to demand what card was turned up, but may ask what is trumps. In consequence of this law, the dealer cannot name a wrong card, which otherwise he might have done. 5. None of the players may take up or look at their cards while they are dealing out. When this is the case, the dealer, if he should happen to miss deal, has a right to deal again, unless it arises from his partner's fault; and if a card is turned up in dealing, no new deal can be called, unless the partner was the cause of it. 6. If any person deals, and, instead of turning up the trump, he puts the trump card upon the rest of his cards, with the face downwards, he loses his deal.

Of Playing out of Turn. 7. If any person plays out of his turn, it is in the option of either of his adversaries to call the card so played, at any time in that deal, provided it does not make him revoke; or either of the adversaries may require of the person who ought to have led, the suit the said adversary may choose. 8. If a person supposes he has won the trick, and leads again before his partner has played, the adversary may oblige his partner to win it if he can. 9. If a person leads, and his partner plays before his turn, the adversary's partner may do the same. 10. If the ace or any other card of a suit is led, and the last player should happen to play out of his turn, whether his partner has any of the suit led or not, he is neither entitled to trump it, nor to win the trick, provided you do not make him revoke.

Of Revoking. 11. If a revoke happens to be made, the adversary may add three to their score, or take three tricks from the revoking party, or take down three from their score; and if up, notwithstanding the penalty, they must remain at nine: the revoke takes place of any other score of the game. 12. If any person revokes, and discovers it before the cards are turned, the adversary may call the highest or lowest of the suit led, or call the card then played, at any time when it does not cause a revoke. 13. No revoke can be claimed till the trick is turned and quitted, or the party who revoked, or his partner, have played again. 14. If a revoke is claimed by any person, the adverse party are not to mix their cards upon forfeiture of the revoke. 15. No person can claim a revoke after the cards are cut for a new deal.

Of calling Honours. 16. If any person calls, except at the point of eight, the adversary may call a new deal if they think proper. 17. After the trump card is turned up, no person must remind his partner to call, on penalty of losing one point. 18. No honours in the preceding deal can be set up, after the trump card is turned up, unless they were before claimed. 19. If any person calls at eight, and his partner answers, and the adverse party have both thrown down their cards, and it appears they have not the honours, they may either stand the deal or have a new one. 20. If any person answers without having an honour, the adversary may consult, and stand the deal or not. 21. If any person calls at eight, after he has played, it is in the option of the adverse party to call a new deal.

Of separating and showing the Cards. 22. If any person separates a card from the rest, the adverse party may call it, provided he names it and proves the separation; but if he calls a wrong card, he or his partner are liable for once to have the highest or lowest card called in any suit led during that deal. 23. If any person, supposing the game lost, throws his cards upon the table, with their faces upwards, he may not take them up again, and the adverse party may call any of the cards when they think proper, provided they did not make the party revoke. 24. If any person is sure of winning every trick in his hand, he may show his cards; but he is then liable to have them called.

Of omitting to play to a Trick. 25. If any person omits playing to a trick, and it appears he has one card more than the rest, it is in the option of the adversary to have a new deal.

Respecting who played a particular Card. 26. Each person, in playing, ought to lay his card before him; and if either of the adversaries mix their cards with his, his partner may demand each person to lay his card before him, but not to inquire who played any particular card.

WHISTON, William, an English divine and mathematician, born in 1667, studied at Clare hall, Cambridge, where he applied himself particularly to mathematics, and displayed his predominant disposition by composing religious meditations. Having taken his first degree in 1690, he was chosen a fellow of his college, and became an academical tutor. Entering into holy orders, he was appointed chaplain to doctor Moore, bishop of Norwich. In 1696, he published a Theory of the Earth, on the principles of the Newtonian philosophy. In 1700, he was appointed deputy professor of mathematics at Cambridge, by Sir Isaac Newton, who, three years after, resigned the professorship in his favour. In 1706, he published an Essay on the Revelation of St John; and the next year, he became Boylean lecturer; and his sermons on that occasion, on the Accomplishment of Scripture Prophecies, were printed in 1708 (8vo.). He had now conceived doubts concerning the doctrine of the Trinity, and, having at length adopted Arian opinions, he was expelled from the university in 1710, and, the following year, was deprived of his professorship. He then removed to the metropolis, and gave lectures on astronomy; but the publication of his Primitive Christianity revived, in 1712 (5 vols., 8vo.), subjected him to the notice of the convocation, and he was prosecuted as a heretic, though the proceedings were ultimately terminated by an act of grace in 1715. Being refused admission to the sacrament at his parish church, he opened his own house for public worship, using a liturgy of his own composition; and towards the close of his life he became a Baptist. In 1719, he published a letter On the Eternity of the Son of God and his Holy Spirit, which prevented him from being chosen a fellow of the royal society, where he was proposed as a candidate in 1720. He subsequently distinguished himself by an abortive attempt to discover the longitude, and by his professed opinions relative to an approaching millennium, and the restoration of the Jews. Among his latest labours were his Memoirs of My own Life (1749—50, 3 vols., 8vo.) He died in London in 1752. Besides numerous original productions, he published a translation of the works of Josephus, with notes, dissertations, &c.

WHITAKER, John, an English divine and antiquary, born at Manchester about 1735, was educated at Oxford, and became a fellow of Corpus Christi college. He began to distinguish himself as an inquirer into English antiquities, by the publication, in 1771, of the first volume of his History of Manchester, including disquisitions relative to the state of Britain under the dominion of the Romans. The same year appeared his Genuine History of the Britons asserted; and this was followed in 1775, by the second volume of his former work, relating to the Saxon period of English history. Having taken orders, he obtained, in 1778, the college living of Ruan Lanyhorne, in Cornwall. He published, in 1783, a course of sermons on death, judgment, heaven, and hell; and, in 1787, appeared his Mary Queen of Scots vindicated (3 vols., 8vo.) which exhibits much research and zeal for the memory of Mary. Among the latter productions of his pen were The Course of Hannibal over the Alps ascertained (2 vols., 8vo.); The Origin of Arianism disclosed; The Ancient Cathedral of Cornwall historically surveyed (2 vols., 4to.); and Gibbon's History reviewed (1791, 8vo.) He was a contributor to the English and Anti-Jacobin Reviews, and the British Critic. His death took place in October, 1808.

WHITBREAD, Samuel, for several years a leading member of the house of Commons, was the son of an eminent brewer of the same name, to whose extensive business he succeeded. He was born in London, in 1758, and was educated at Eton, whence he was removed to St John's college, Cambridge; after which he made the tour of Europe, under the care of Mr Coxe. Soon after his return, he married the daughter of Sir Charles (afterwards earl) Grey, and, in 1790, was returned to the house of Commons for the borough of Steyning; but for the greater part of his life, he represented the town of Bedford, in which borough and county he possessed a large landed property. He immediately became an active member of the opposition headed by Mr Fox, but distinguished himself by acting, on many occasions, agreeably to his own views, independently of his party. For many years, he was esteemed one of the most shrewd and vigorous opponents of the Pitt administration, and of the war growing out of the French revolution. He was also the conductor of the impeachment against lord Melville, which, although terminating in the acquittal, threw a shade over the close of that statesman's life, and proved a source of extreme concern to the premier. Of the political opinions of Mr Whitbread, those who study the history of the period in which he acted a very conspicuous part in parliament, will judge by their own; but few will be disposed to deny him the praise of being, for many years, a most able, useful, and active senator. The close of his life was melancholy: an over-anxious attention to business in general, but, more especially, to the intricate concerns of Drury lane theatre, produced a temporary aberration of intellect, during which, he suddenly terminated his own life, in 1815.

WHITBY; a seaport of England, in the north riding of Yorkshire, situated at the mouth of the Esk, on the German sea; 46 miles north-east of York, 243 north of London. The Esk forms the harbour, and divides the town into two nearly equal parts, connected by a draw-bridge, so constructed as to admit ships of 500 tons to pass. By the reform act of 1832, it was constituted a borough, returning one member to parliament. Whitby carries on a great trade in coals, and also exports various articles of provision, tallow, &c.; and the alum works in the neighbourhood employ a great number of hands. Ship-building is carried on here extensively. The immense mountain of alum rock, and the works for preparing alum, are interesting objects. Population, in 1821, 10,275; in 1831, 11,720.

WHITBY, Daniel, a learned divine, born in 1638; died in 1726. He was a fellow of Trinity college, Oxford. Having distinguished himself by his zeal in attacking the Catholic writers, he was rewarded by Bishop Ward with a prebend in Salisbury cathedral. He took his doctor's degree, but soon after incurred censure for a treatise entitled the Protestant Reconciler. He continued his literary labours, and produced a Paraphrase and Commentary on the New Testament (2 vols., folio); and a treatise on the "Five points" controverted between the Arminians and Calvinists (8vo. 1710.) Towards the close of his life, a complete revolution took place in his literary opinions: he became an Arian, and had a dispute on the subject with doctor Waterland. He left a book called the Last Thoughts of Doctor Whitby.

WHITE. See *Colours.*

WHITE, Henry Kirke; a youthful poet of distinguished ability, was born at Nottingham, March 21, 1785. He was the son of a butcher, and was intended for the same occupation; but the delicacy of his constitution, occasioned his destination to be changed for the more sedentary employment of a stocking weaver. From his infancy, he manifested an extraordinary love of learning, and, at the age of fourteen, produced specimens of poetry worthy of preservation. He was now removed from the stocking-loom to be placed in an attorney's office, and devoted his spare time to the study of Latin and Greek. Increase of knowledge inspired him with the desire to obtain more favourable opportunities for improving his talents; and the advantage of a university education, with the prospect of entering the church, became the great object of his ambition. At length, through the generosity of Mr Wilberforce, and the exertions of the reverend Charles Simeon, he was admitted a student of St John's college, Cambridge. There he applied himself to his studies with such unremitting labour, that his health became deranged, and he died Oct. 19, 1806, deeply lamented, both on account of his virtues and his talents. He published, in 1803, a poem called Clifton Grove; and after his death, his Remains, consisting of poems, letters, and fragments, were edited by Robert Southey (2 vols., 8vo).

WHITE ANTS. See *Termites.*

WHITE BEAR. See *Bear.*

WHITE HORSE VALE; a vale in England, in Berkshire, so called from the figure of a horse in a galloping posture, cut in the side of a chalky hill, as is supposed in memory of a great victory gained by Alfred over the Danes in the year 871. The villagers in the neighbourhood have a custom, from time immemorial, of assembling about midsummer for what they term "scouring the horse," when they remove every weed or obstacle that may have obstructed his figure, and retire to spend the evening in various rural sports.

WHITE LEAD. See *Ceruse.*

WHITE MOUNTAINS; the highest mountains in the United States east of the Mississipi, situated in the northern part of New Hampshire, nearly in the centre of the county of Coos, and extending about twenty miles from north-east to south-west, being the most elevated summits of a long range that extends much farther in a south-west direction. Their base is eight or ten miles broad. They are about twenty-five miles south-east of Lancaster, seventy north of Concord, eighty-two north-by-west from Portsmouth; lat. 44° 15′ north; lon. 71° 20′ west. They are covered with ice and snow nine or ten months in the year; and, although more than sixty miles from the nearest part of the Atlantic coast, are distinctly seen for a considerable distance at sea. The highest peak is called mount Washington. The next, south of this, is Monroe; the next, farther south, is Franklin; and Pleasant is the third in that direction. The first north of Washington is Jefferson; the second is Adams; the eastern part is Madison. These are the names commonly given to the principal peaks. Their elevation has been a subject of much speculation. It was formerly supposed to be ten or eleven thousand feet; but the barometrical measurements of captain Partridge, and those of Brackett and Weeks, by means of a spirit level, so nearly agree, that we have no longer any reason to doubt that their height was greatly overrated. The measurements of captain Partridge are here given, and the mountains are arranged from north to south :—

Mount Adams,	5328 feet.
.. Jefferson,	5058 ..
.. Washington,	6234 ..
.. Monroe,	4932 ..
.. Franklin,	4711 ..
.. Pleasant,	4356 ..
.. Madison (the eastern peak),	4866 ..
The base of the mountains,	1770 ..

The elevations here given are estimated from the level of the ocean. Subsequent measurements made by captain Partridge do not perfectly agree with these. These mountains are decidedly of primitive formation. The three highest peaks are composed entirely of fragments of rocks, heaped together in confusion, but pretty firmly fixed in their situations. They consist of granite and gneiss, and are excessively rough, from the great size of the crystals. There is considerable mica in most of them, and in some it is very abundant. The granite contains emeralds, tourmaline, and garnets. Crystals of quartz, pyrites, jasper, porphyry, magnetic iron ore, and several other fossils, are found in very small quantities. No indications of volcanoes have been discovered. In sublimity of scenery, these mountains far excel any others in New England; and it has become fashionable to visit them during the warmest months. Some of the largest rivers of New England originate in the mountains. The Saco flows from their eastern side; the branches of the Ameriscoggin from the north; the Amonoosuck, from the west, flows into the Connecticut; and the Pemigewasset flows from the south, and is the principal branch of the Merrimack. Trees are found on the sides of these mountains; but, as the traveller ascends, he sees the vegetation become small and meagre, and it ceases before he reaches the highest summits.

The *Notch of the White Mountains* is a very narrow defile, extending two miles in length, between two huge cliffs. The entrance of the chasm is formed by two rocks standing perpendicular at the distance of twenty-two feet from each other, one twenty-two, and the other twelve feet high. The mountain, otherwise a continued range, is here cloven asunder, opening a passage for the waters of Saco river. The gap is so narrow that space has with difficulty been obtained for the road from Lancaster to Portland. About half a mile from the entrance of the Notch is seen a most beautiful cascade issuing from a mountain on the right, about 800 feet above the valley. This is called, by Dwight, the Silver cascade. Another called the Flume, falls from a height of about 250 feet, over three precipices, from the first two in a single sheet, and from the third in three streams, which unite in a basin at the bottom. Good descriptions of the White mountains are contained in Dwight's *Travels; New England Journal;* and *N. H. Hist. Coll. for* 1823.

WHITE PLAINS; a post-township, and half shire town, of Westchester county, New York, thirty miles from the city, six east of the Hudson, and fourteen south of Bedford. This place was rendered memorable by a battle fought here, Oct. 28, 1776, between the American and the British troops, and by many other important incidents of that period.

WHITE RENT. See *Quit Rent.*

WHITE RIVER, in Arkansas, has its source in the Black mountains, which divide its waters from those of the Arkansas. The western branches rise, and run a long distance, in Missouri. It receives many large tributaries, and traverses much valuable territory. Its waters are remarkably pure and transparent. Where it flows into the Mississippi, it is 300 yards wide. It is supposed to be navigable for boats 1200 miles; but this is only 500 miles in a direct line. The country on its banks has been sufficiently explored to prove that it affords every inducement to settlers; but no extensive settlements have yet been made. About seven miles from its mouth, it gives off a bayou as broad as itself, that runs at right angles with it, and flows through a deep, inundated forest, and unites with the Arkausas. It strikes that river thirty miles from its mouth. It is not navigable in the latter part of summer; but, at other times, boats which descend the Mississippi with the intention of ascending the Arkansas, always proceed through the White river and this bayou. The Arkansas does not receive this tribute constantly from the White: the bayou runs either way, according to the level of the water at its two ends. The White river will probably furnish water-power for immense manufacturing establishments at a period not far distant.

WHITE SEA; a large gulf of the Arctic ocean, between the peninsula of Canin and the coast of Lapland. It penetrates into the Russian territory, to the depth of between 300 and 400 miles. Its shape is long and narrow; its greatest extent from west to east. It extends from lon. 32° to 4 east, and from lat. 63° 45′ to 68° 25′ north. It receives its name from its being frozen over and covered with snow during the greater part of the year. It is navigable only from the middle of May to the end of September. The shores are surrounded by rocks and small islands; and about thirty rivers, among which the principal are the Northern Dwina, the Onega, and the Mezene, empty themselves into the sea. The mouth of the latter forms a bay, on which is situated the town of Mezene. The Dwina enters the sea by two mouths, which are separated by an island. Upon its banks lies Archangel (q. v.), founded in 15 and the commercial emporium of this region. Among the islands of the White sea, the largest is the Solovetskoi or Soloffski isle, in the bay of Onega. Two canals, uniting the Dwina with the Wolga and the Dnieper, connect the White sea with the Caspian and Black seas.

WHITE SWELLING, or HYDARTHRU (from ὕδωρ, water, and ἄρθρον, a joint). Systema writers have generally distinguished this terrible disease into two kinds, namely, rheumatic and scrofulous. The last species of the disease they also distinguish into such tumours as primarily affect the bones, and then the ligaments and soft parts; and into other cases, in which the ligaments and soft parts become diseased before there is any morbid affection of the bones. The knee, ankle, wrist and elbow are the joints most subject to white swellings. The pain is sometimes vehement from the very first; in other instances, there is hardly the least pain in the beginning of the disease. Sometimes the pain continues without interruptions; sometimes there are intermissions; and, in other instances, the pain recurs at regular times, so as to have been called, by some writers, periodical. At the commencement of the disease, in the majority of instances, the swelling is very inconsiderable, or there is even no visible enlargement whatever. In the little depressions naturally situated on each side of the patella, a fulness first shows itself, and gradually spreads all over the affected joint. The patient, unable to bear the weight of his body on the disordered joint, in consequence of the great increase of pain thus created, gets into the habit of only touching the ground with his toes; and the knee, being generally kept a little bent, in this manner soon loses the capability of becoming extended again. When white swellings have lasted a while, the knee is almost always found in a permanent state of flexion. In scrofulous cases of this kind, pain constantly precedes any appearance of swelling; but the interval between the two symptoms differs very much in different subjects. The morbid joint in the course of time, acquires a vast magnitude. Still the integuments retain their natural colour, and remain unaffected. The enlargement of the articulation, however, always seems greater than it really is, in consequence of the emaciation of the limb both above and below the disease. As the distemper of the articulation advances, collections of matter form about the part, and at length burst. The ulcerated openings sometimes heal up; but such abscesses are generally followed by other collections, which pursue the same course. In some cases these abscesses form a few months after the first affection of the joint; on other occasions, several years elapse, and no suppuration of this kind makes its appearance. The patient's health becomes gradually impaired: he loses his appetite and natural rest and sleep; his pulse is small and frequent: and obstinate debilitating diarrhœa, and profuse nocturnal sweats, ensue. Rheumatic white swellings are very distinct diseases from the scrofulous distemper of large joints. In the first, the pain is said never to occur without being attended with swelling. Scrofulous white swellings, on the other hand, are always preceded by a pain, which is particularly confined to one point of the articulation. In rheumatic cases the pain is more general, and diffused over the whole joint. External irritation, either by exposure to damp or cold, or by the application of violence, is often concerned in bringing on the disease; but very frequently no cause of this kind can be assigned for the complaint. As for scrofulous white swellings, there can be no doubt that they are under the influence of a particular kind of constitution, termed a *scrofulous* or *strumous* habit. In this sort of temperature every cause capable of exciting inflammation, or any morbid and irritable state of a large joint, may bring on such disorder as may end in this disease.

WHITE THORN. See *Hawthorn*.

WHITE WARE is made of pipe-clay, which contains so little of oxide of iron that it does not turn red in burning. In Wedgewood's manufactory, the clay is prepared by bringing it to a state of minute division by the aid of machinery. This machinery consists of a series of iron blades, or knives, fixed in an upright axis, and made to revolve in a cylinder, and intersecting or passing between another set of blades, which are fixed to the cylinder. The clay is thus minutely divided, and when sufficiently fine, is transferred to a vat. It is here agitated with water until it assumes the consistence of a pulp, so thin, that the coarser or stony particles subside to the bottom after a little rest, while the finer clay remains in suspension. This last is poured off and suffered to subside; after which it is passed through sieves of different fineness, and becomes sufficiently attenuated for use. To this clay is added a certain quantity of flint, reduced to powder by heating it red-hot, and throwing it into cold water to diminish the cohesion of its parts. Afterwards, it is pounded by machinery, ground in a mill, sifted, and washed precisely as the clay is treated, and made into a similar pulp. In this state the two ingredients are intimately mixed together. The addition of flint lessens the shrinking of the clay in the fire, and thus renders it less liable to warp and crack in the burning. At the same time, by its partial fusion, it communicates to the ware that beautiful translucency which is so much admired in porcelain, and of which the simple clay wares are destitute. (See *China ware*.) The fine pulp of flint and clay being intimately mixed, is then exposed to evaporation by a gentle heat, until the superfluous water is dissipated, and the mass reduced to a proper consistency to work. To produce a uniformity in the thickness of the material, it is taken out in successive pieces, which are repeatedly divided, struck, and pressed together, till every part becomes blended with the rest.

WHITEFIELD, George, founder of the Calvinistic Methodists, was born at Gloucester, where his parents kept the Bell inn, Dec. 16, 1714. He was the youngest of seven children; and his father dying in his infancy, the care of his education devolved upon his mother. He was sent to a grammar school at Gloucester, where he distinguished himself by a ready memory and good elocution. Being destined to assist his mother in the business of the inn, he was taken early from school, and for some time officiated in a blue apron as drawer. At the age of eighteen, however, he embraced an offer of being entered as servitor at Pembroke college, Oxford, where he became acquainted with the Wesleys, and joined the small society which procured them the name of Methodists. (See *Methodist* and *Wesley*.) Here, in addition to religious preaching, reading, and visits to gaols, and to the poor, he describes himself as lying whole days, and even weeks, on the ground in prayer, choosing the worst sort of food, and dressing in a patched gown and dirty shoes, to acquire a habit of humility. Hearing of his devotional tendencies, doctor Benson, bishop of Gloucester, made him an offer of ordination, at the early age of twenty-one, which he accepted; and he was ordained a deacon in 1736. Such was his strain of preaching, that, at his first sermon at Gloucester, a complaint was made to the bishop that he had driven fifteen people mad; on which the prelate observed that he hoped the madness would not be forgotten before the next Sunday. The week following, he returned to Oxford, where he graduated

B. A., and soon after was invited to London, to officiate at the chapel of the Tower. He preached, also, at various other places, and for some time supplied a curacy at Dummer, in Hampshire. The account sent him by the Wesleys of their progress in Georgia, at length excited in him a desire to assist in their pious labours; and, embarking at the close of 1737, he arrived at Savannah in the following May, where he was received with great cordiality, and acquired considerable influence. Observing the deplorable want of education in the colony, he projected an orphan-house, for which he determined to raise contributions in England, where he arrived in the beginning of 1739. Although discountenanced by many of the clergy, bishop Benson did not scruple to confer on him priest's orders; and, on repairing to London, the churches in which he preached were incapable of holding the crowds who assembled to hear him. He now adopted the design of preaching in the open air, which he seems first to have practised at Kingswood, near Bristol, among the colliers. His ardent and emphatic mode of address attracted several thousands of these people as auditors, on whom his discourses produced a surprising effect, and whose vicious manners and habits he visibly improved. He afterwards preached in the open air in Bristol, and in Moorfields, Kennington, and other places in the neighbourhood of London, to vast assemblages of people, who came from all parts to hear him. In August, 1739, he again embarked for America, and made a tour through several of the provinces, where he preached to immense audiences, with an effect which is pourtrayed, in a very forcible manner, in the autobiography of Benjamin Franklin. He arrived at Savannah in January, 1740, where he laid the foundation of the orphan-house, and, after making another extensive tour, returned to England, where he arrived in the March of the following year. During his absence, his cause had been declining at home; and the differences between him and Wesley, on the doctrines of election and reprobation, deprived him of many followers. His circumstances were also embarrassed by his engagements for the orphan-house; but his zeal and intrepidity gradually overcame all difficulties, and produced the two tabernacles in Moorfields and in Tottenham-court-road. After visiting many parts of England, Scotland and Wales, where he married in 1744, he again returned to America, and remained there nearly four years, not returning until July, 1748. He was soon after introduced to the countess of Huntingdon, who made him one of her chaplains. A visit to Ireland, and two more voyages to America, followed, and, for several years, his labours were unremitting. At length, on his seventh voyage to America, he was carried off by an asthma, at Newburyport, in New England, September 30, 1770, in the fifty-sixth year of his age. The person of Whitefield was tall and well-proportioned, and his features good, with the exception of a cast in one of his eyes. He possessed a high degree of natural eloquence; but his learning and literary talents were mean, and he was a writer only for his own followers. His works were published in 1771 (6 vols., 8vo.).

WHITEHALL; a street in Westminster, containing several public offices. Among these are the Horse-Guards, an edifice so called in consequence of being the station where that part of the troops usually do duty; here is the office of the commander-in-chief of the army: the Treasury, a stone building, near the Horse-Guards, facing the parade; the treasury-board is held in this building; that part of the Treasury which fronts Whitehall is a portion of the old Whitehall palace, erected by cardinal Wolsey; but it has been considerably altered, both in the reign of Charles II. and in 1816; the admiralty office, a large pile, built on the site of Wallingford house; the front has two wings and a portico, supported by four large stone pillars of the Ionic order; besides a hall and other public apartments, here are spacious houses for seven commissioners of the admiralty; and on the top of the building is a semaphore telegraph, by means of which a correspondence is maintained with various parts of the coast.—On the bank of the Thames was a palace called *Whitehall*, built by Hubert de Burgh, earl of Kent, before the middle of the thirteenth century. In 1530, it became the residence of the court, but, in 1697, was destroyed by fire, except the banqueting-house, added by James I. according to a design of Inigo Jones, in 1619. This is a magnificent structure of hewn stone. The building chiefly consists of one room, of an oblong form, forty feet high. The ceiling, representing the apotheosis of James I., was painted by Rubens and has been retouched by Cipriani. It is adorned with trophies taken from the French in the Spanish campaign.

WHITEHAVEN: a seaport of England, in Cumberland, situated on a bay of the Irish sea, forty miles south-west of Carlisle, 320 north-west of London. It has a good artificial harbour, with six piers; also six yards for ship-building. The entrance of the harbour is defended by four batteries, which formerly mounted in all 98 cannon including 12 forty-two pounders and 18 thirty-six pounders. These batteries were extended, in 1788, owing to the great alarm occasioned by the landing of Paul Jones, who attempted to burn the town, on the 23d of April in that year. The principal article of export from this port consists of coal, besides which, alabaster, lime, freestone, and grain, are exported in considerable quantities. In return, Whitehaven receives different articles of West Indian, Baltic, American, and Mediterranean produce, in particular flax and linen from Ireland, wine from Portugal, and fruit from the Levant. In addition to its being the centre of a great carrying trade, it is a place of considerable manufacturing importance, the principal articles produced being linen yarn and cloth, sail-cloth, cordage, anchors, nails, checks, ginghams, earthenware, copperas, colours, candles, and soap; the two last named are exported in considerable quantities to the West Indian colonies. Coal, it is supposed, was first raised here by Sir John Lowther, about 160 years ago, since which, the workings have increased rapidly, and the mines now almost rival in extent those of Sunderland and Newcastle; in these the inhabitants are chiefly employed. By the reform act of 1832, Whitehaven was constituted a borough, returning one member to parliament. Population in 1821, 12,436; in 1831, 11,393. Including Preston-Quarter, which is a suburb, the population in 1831, was 15,716. In addition to these, there are almost 1000 sailors belonging to vessels registered in this port. The population of the town in 1831, exhibits a decrease of about 1100, as compared with that of 1821, according to the parliamentary returns. As this is very improbable, it appears more likely that the figures have been misplaced, and that the population in 1831, instead of 11,393, should have been 13,193, thus making the total population of the town and suburbs in the same year, 17,516.

WHITEHEAD, George, an eminent early leader among the Friends, was born at Semteyg, in Westmoreland, about 1636, and received his education at the free school of Blencouwe, in Cumberland. On leaving school, he was for some time engaged in the instruction of youth; but, as early as the age of eighteen, his journal exhibits him travelling in various parts of England, propagating his religious principles. He endured, as might be expected from the spirit of the times, much persecution, was imprisoned many times, and, in one instance, sentenced to be whipped, which ignominy he calmly endured, and proceeded to preach as before. After the revolution, he was serviceable to the society of Friends by his active services during the time the toleration bill was before parliament, and in making those representations which led, in civil cases, to the admission of an affirmation in lieu of an oath, as well as to other relief. This active, able and determined character lived to a very advanced period, dying, in great respect and esteem, in March, 1723, at the age of eighty-six years. Besides various publications, chiefly controversial, he left behind him some Memoirs of his Life, which were printed in 1725, in 1 vol., 8vo. See *Quakers*.

WHITEHEAD, Paul, an English poet, was born in London, in 1710, and was apprenticed to a mercer in the city. In consequence of having joined Fleetwood, manager of Drury lane theatre, in a bond for £3000, he was confined several years in prison. His first productions were three poems, entitled the State Dunces (1733), Manners (1738), and Honour, a satire. The second produced a prosecution of his bookseller, Dodsley. These circumstances drew on him a considerable share of public notice. Having obtained the appointment of deputy-treasurer to the exchequer, he passed the remainder of his days in retirement at Twickenham. He died in 1774. Besides the writings already enumerated, he was the author of a poem entitled the Gymnasiad (printed in 1774). As an author, he appears to have possessed more judgment than genius; and his works, though popular in their day for their temporary allusion, are now little read. As a man, his morals may be judged of by the fact of his having been a member of the club at Medmenham abbey, the sensual orgies of which were exposed, in revenge, by Wilkes, when prosecuted for his Essay on Woman. Whitehead, however, in the decline of life, acted a benevolent, hospitable and respectable part. A complete edition of his works was first published by Kearsley, in 1777, with a biographical memoir.

WHITEHEAD, William, an ingenious poet, the son of a baker of Cambridge, was born in 1715. At the age of fourteen, he was placed at Winchester school, and obtained a foundation scholarship at Clare hall, Cambridge, which led to a fellowship in 1742. About the same period, he produced two of his earliest and best dramatic pieces, Creusa, and the Roman Father. Three years after, he visited Germany, Italy, Switzerland, and the Low Countries, in quality of a travelling tutor, and, on his return to England, obtained the registrarship to the order of the Bath. He was nominated poet laureate, on the vacancy occasioned in that post by the death of Cibber. His death took place in 1785. In addition to the writings already spoken of, he was the author of the School for Lovers, a comedy (1762); Trip to Scotland, a farce (1771); a Charge to the Poets, a satire; Variety; the Goat's Beard; with several other miscellaneous poems. Mason has written his life (1788).

WHITELOCK, Bulstrode, an eminent statesman and lawyer, the son of Sir James Whitelock, a justice of the king's bench, was born in London, in 1605, and received his education at St John's college, Oxford. He soon obtained eminence as a lawyer, and was consulted by Hampden when under prosecution for refusing to pay ship-money. In 1640, he was chosen M. P. for Marlow, in the long parliament, in which he acted with Selden and the more moderate anti-royalists; but, though averse to the commencement of hostilities, he accepted the office of deputy-lieutenant for Oxfordshire and Buckinghamshire and took the command of a company of cavalry, raised for the service of parliament. In January, 1642—3, he was one of the commissioners appointed to treat with the king at Oxford, and, in 1644, again interfered to promote a pacification. He appeared as a lay-member of the Westminster assembly for settling the form of church government, when he opposed the divine right of the presbytery. In February, 1648—9, he was nominated one of the council of state, and was subsequently sent, by Cromwell, on an embassay to the court of Christina, queen of Sweden, with whom he concluded a treaty. Returning home, he became a commissioner of the great seal, which office he resigned, on the regulation and limitation of the court of chancery, and was then appointed a commissioner of the treasury. He was member for Buckinghamshire, in Oliver's third parliament, and was called, by the protector, to his house of peers. During the government of Richard Cromwell, he acted as one of the keepers of the great seal, and afterwards opposed the designs of general Monk. At the restoration, he retired to his estate at Chilton, in Wiltshire, where he passed the last years of his life, and died in January, 1676. He was the author of Memorials of the English Affairs, from the Beginning of the Reign of Charles I. to the Restoration (1682, folio, an improved edition of which appeared in 1732); Memorials of the English Affairs from the supposed expedition of Brute to this Island, to the End of the Reign of James I. (1706, folio); Notes upon the King's Writ for choosing Members of Parliament, 13 *Car. II.*, being Disquisitions on the Government of England (1766, 2 vols., 4to.); a Journal of the Swedish Embassy, in 1653 and 1654, from the Commonwealth of England, &c. (1772, 2 vols., 4to.); and Whitelock's Labours, remembered in the Annales of his Life, written for the Use of his Children.

WHITEWOOD. See *Tulip-Tree.*

WHITING (*gadus merlangus*); a fish, belonging to the cod family, very abundant along the northern coasts of Europe. It makes its appearance in vast shoals, keeping at the distance of from half a mile to three miles from the shore, and is taken by the line in great numbers. It is considered the most delicate and most wholesome of all the species of cod; but it does not attain a large size, usually not exceeding a foot in length. It resembles the pollock in form, and belongs to the same division of the genus, having three dorsal fins, and the lower lip destitute of a beard. The head and back are pale brown; the lateral line white and crooked; the belly and sides silvery, the latter longitudinally streaked with yellow.

WHITING, Chalk, cleared of its grosser impurities, then ground in a mill, and made up into small loaves, is sold under the name of *whiting*.

WHITLOW, in surgery, is an inflammation affecting one or more of the bones of the fingers, and generally terminating in an abscess. In severe cases, the disorder extends to many other parts besides the fingers, making its way above the wrist. There is a similar disorder which attacks the toes. Whitlows differ very much in their degree of violence, and in their depth and extent. Surgical writers usually make four or five varieties. The usual exciting causes of whitlows are various external injuries, as pricks, contusions, &c. The lodgment of a thorn or splinter in the part is another frequent cause. They are much more common in young, healthy persons than in others, and, in many cases, occur without our being able to assign any particular cause for them.

WHITNEY, Eli, a celebrated mechanician, and the inventor of the cotton gin, was born at Westborough, Worcester county, Massachusetts, Dec. 8, 1765. His father was a respectable farmer. Very early he gave striking indications of the mechanical genius for which he was distinguished. His education was of a limited character, until he had reached the age of nineteen, when he conceived the idea of entering a college. Accordingly, notwithstanding the opposition of his parents, he prepared himself, partly by means of the profits of his manual labour, partly by teaching a village school, for the freshman class in the university of New Haven, which he entered, May, 1789. Soon after he took his degree, in the autumn of 1792, he entered into an engagement with a gentleman of Georgia, to reside in his family as a private teacher. But on his arrival in that state, he found that another teacher had been employed, and he was left entirely without resources. Fortunately, however, among the passengers in the vessel in which he sailed, was Mrs Greene, the widow of general Greene, who had given him an invitation to spend some time at her residence at Mulberry grove near Savannah; and, on learning his disappointment, she benevolently insisted upon his making her house his home until he had prepared himself for the bar, as was his intention. He had not been long in her family before a complete turn was given to his views. A party of gentlemen, on a visit to Mrs Greene, having fallen into a conversation upon the state of agriculture among them, expressed great regret that there was no means of cleansing the green seed cotton, or separating it from its seed, remarking that until ingenuity could devise some machine which would greatly facilitate the process of cleansing, it was in vain to think of raising cotton for market. "Gentlemen," said Mrs Greene, "apply to my young friend Mr Whitney: he can make any thing." She then conducted them to a neighbouring room, where she showed them a number of specimens of his genius. The gentlemen were next introduced to Whitney himself; and, when they named their object, he replied that he had never seen either cotton or cotton seed during his life. But the idea was engendered; and it being out of season for cotton in the seed, he went to Savannah, and searched among the warehouses and boats until he found a small portion of it. This he carried home, and set himself to work with such rude materials and instruments as a Georgia plantation afforded. With these resources, however, he made tools better suited to his purpose, and drew his own wire, of which the teeth of the earliest gins were made, which was an article not at that time to be found in the market of Savannah. Mrs Greene and Mr Miller, a gentleman who, having first come into the family of general Greene as a private tutor, afterwards married his widow, were the only persons admitted into his workshop, who knew in what way he was employing himself. The many hours he spent in his mysterious pursuits, afforded matter of great curiosity, and often of raillery to the younger members of the family. Near the close of the winter, the machine was so nearly completed as to leave no doubt of its success. Mrs Greene then invited to her house gentlemen from different parts of the state; and on the first day after they had assembled, she conducted them to a temporary building which had been erected for the machine, and they saw with astonishment and delight, that more cotton could be separated from the seed in one day, by the labour of a single hand, than could be done in the usual manner in the space of many months. An invention so important to the agricultural interest (and, as it has proved, to every department of human industry) could not long remain a secret. The knowledge of it soon spread through the state; and so great was the excitement on the subject, that multitudes of persons came from all quarters of it to see the machine; but it was not deemed prudent to gratify their curiosity until the patent right had been secured. So determined, however, were some of the populace to possess the treasure, that neither law nor justice could restrain them; they broke open the building by night, and carried off the machine. In this way the public became possessed of the invention, and before Mr Whitney could complete his model and secure his patent, a number of machines were in successful operation, constructed with some slight deviation from the original, with the hope of evading the penalty for violating the patent right. A short time after this, he entered into partnership with Mr Miller, who, having considerable funds at command, proposed to him to become his joint adventurer, and to be at the whole expense of maturing the invention, until it should be patented. If the machine succeeded in its intended operation, the parties agreed to share equally all the profits and advantages accruing from it. The instrument of their partnership bears date May 27, 1793. Immediately afterwards, Mr Whitney repaired to Connecticut, where, as far as possible, he was to perfect the machine, obtain a patent, and manufacture and ship for Georgia such a number of machines as would supply the demand. On the twentieth of June, 1793, he presented a petition for his patent to Mr Jefferson, then secretary of state; but the prevalence of the yellow fever in Philadelphia, at that period the seat of government, prevented his concluding the business until several months afterwards. We have not space sufficient at our disposal to give a satisfactory detail of the obstacles and misfortunes which, for a long time, hindered the partners from reaping those advantages from the invention which it should have procured for them, and which they had an ample right to expect: and we must therefore refer our readers to an excellent memoir of Mr Whitney, contained in the number of the American Journal of Science and Arts, conducted by professor Silliman, for Jan 1832. These difficulties arose principally from the innumerable violations of their patent right, by which they were involved in various almost interminable lawsuits. The legislature of South Carolina purchased, in 1801, their right for that state for the sum of 50,000 dollars—a mere "song," to use Whitney's own phrase, "in comparison with the worth of the thing; but it was securing something." It enabled them to pay the debts which they had contracted, and divide something between them. In the following year, Mr Whitney negociated a sale of his patent right with the state of North Carolina, the legislature of which laid a tax of two shillings and sixpence upon *every saw* (and some of the gins had forty saws) employed in ginning cotton, to be continued for five years, which sum was to be collected by the sheriffs in the same manner as the public taxes; and, after deducting the expenses of collection, the proceeds were faithfully paid over to the patentees. No small portion, however, of the funds thus obtained in the two Carolinas, was expended in carrying on the fruitless lawsuits which it was deemed necessary to prosecute in Georgia. In 1803, the entire responsibility of the whole concern devolved upon him, in consequence of the death of Mr Miller. In 1812, he made application to congress for the renewal of his patent. In his memorial he presented a history of the difficulties which he had been forced to encounter in defence of his right, observing that he had been unable to obtain any decision on the merits of his claim until he had been eleven years in the law, and thirteen years of his patent term had expired. He set forth that his invention had been a source of opulence to thousands of the citizens of the United States; that, as a labour-saving machine, it would enable one man to perform the work of a thousand men; and that it furnishes to the whole family of mankind, at a very cheap rate, the most essential article of their clothing. Hence he humbly conceived himself entitled to a further remuneration from his country, and thought he ought to be admitted to a more liberal participation with his fellow citizens in the benefits of his invention. But the application was rejected by congress on account of the warm opposition it experienced from a majority of the southern members. Some years before, in 1798, Mr Whitney, impressed with the uncertainty of all his hopes founded on the cotton gin, had engaged in another enterprise, which conducted him, by slow but sure steps, to a competent fortune. This was the manufacture of arms for the United States. He first obtained a contract through the influence of Oliver Wolcott, at that time secretary of the treasury, for 10,000 stand of arms, amounting to 134,000 dollars, which was to be fulfilled within a little more than the period of two years. This was a great undertaking, as may be inferred from the facts, that the works were all to be erected, the machinery was to be made, and much of it to be invented; the raw materials were to be collected from different quarters, and the workmen themselves, almost without exception, were yet to learn the trade. The impediments he was obliged to remove were too numerous and great to allow him to fulfil his stipulation as to time, and eight years, instead of two, elapsed, before the muskets were all completed. The entire business relating to the contract was not closed until Jan. 1809, when (so liberally had the government made advances to the contractor) the final balance due Mr Whitney was only 2400 dollars. It is universally conceded that his genius and industry greatly contributed to the improvement of the manufacture of arms, and, indeed, to the general advancement of arts and manufactures; for many of his inventions for facilitating the making of muskets were applicable to most other manufactures of iron and steel. In 1812, he entered into a new contract with the United States for 15,000 stand of arms, and in the mean time executed a similar engagement for the state of New York. In Jan. 1817, he married the youngest daughter of Pierpont Edwards, late judge of the district court for the state of Connecticut. For the five subsequent years he continued to enjoy domestic happiness, a competent fortune, and an honourable reputation, when he was attacked by a fatal malady, an enlargement of the prostrate gland, which, after causing great and protracted suffering, terminated his life on the eighth of Jan., 1825. In person, Mr Whitney was considerably above the ordinary size, of a dignified carriage, and of an open, manly and agreeable countenance. His manners were conciliatory, and his whole appearance such as to inspire respect. He possessed great serenity of temper, though he had strong feelings, and a high sense of honour. Perseverance was a striking trait in his character. Every thing that he attempted he effected as far as possible. In the relations of private life, he enjoyed the affection and esteem of all with whom he was connected. With regard to the results of his genius, we may quote the declaration of Fulton, that Arkwright, Watt and Whitney were the three men who did most for mankind of any of their contemporaries.

WHITSUNTIDE. See *Pentecost*, and *Sunday*.

WHITWORTH, CHARLES, earl, descended of an ancient family in Staffordshire, was born in 1754, at Leoburne-grange, Kent, the seat of his father, Sir Charles Whitworth, and was educated at Tunbridge grammar-school, on leaving which he obtained a commission in the guards. He soon quitted the army, and, after going rapidly through the usual subordinate diplomatic situations, was appointed, in 1786, minister plenipotentiary to the court of Poland, then the centre of the intrigues which terminated in the dismemberment and annihilation of that unfortunate kingdom. (See *Poland*.) In the autumn of 1788, he proceeded, in the same capacity, to St Petersburg, where, in 1793, he received the red riband of the Bath, to give dignity to his mission, the object of which was a coalition against the French revolutionary government. On his return to England in 1800, Sir Charles was created baron Whitworth of the kingdom of Ireland, and was soon after again despatched abroad on an embassy to the court of Denmark, then complaining of the right of search exercised by the British ships. An adjustment, which proved but short-lived, took place through his exertions in the August of the same year. The ambassador accordingly returned home, and, in the April following, married the duchess dowager of Dorset. After the treaty of Amiens, concluded by lord Hawkesbury and the marquis Cornwallis, lord Whitworth was accredited as plenipotentiary to Paris towards the close of 1802. His mission having terminated abruptly in the renewal of hostilities, he quitted the French capital, May 13, 1803. In the spring of 1813, he was made one of the lords of the bedchamber, and, the year following, took his seat in the house as an English peer, by the title of viscount Whitworth. In the August of 1814, he succeeded the duke of Richmond as viceroy of Ireland, which dignity he enjoyed till 1817, when, the usual period of office being expired, he returned to England, having been in the interval advanced to an earldom. Lord Whitworth died in 1825.

WICK; the county town of Caithness, in Scotland, is situated on the sea-coast, or bay of Wick, distant from Edinburgh 276 miles, by way of Perth and Dunkeld. It takes its name from the Danish word *wick*, which signifies a bay or inlet. The town, which lies low and is irregularly built, is composed of the royal burgh of Wick, and the suburbs of Louisburgh and Pulteney-town. Of late years it has been considerably improved and extended, but it still retains much of the dirty and slovenly appearance of the smaller Scottish towns. Wick is the principal seat of the northern herring fishery; and during the fishing season, when the harbour is filled with vessels, and thousands of boats are continually floating across the bay and the surrounding sea, it presents an animating and bustling appearance. Many thousands of fishermen, curers, and women, employed in gutting and packing the herrings, are then congregated from all parts of the sea coast of Scotland, and from the remotest parts of the Highlands. The herrings, when cured, are principally exported to the Baltic ports, and to Ireland. There are no manufactories, but various distilleries, rope, and shipping companies, &c. have lately been established. Population of the burgh and parish of Wick in 1831, 9,850.

WICKLIFF, WICLEF, OR DE WYCLIFFE, JOHN, an eminent reformer of Christianity, or, as he is often styled, the Morning Star of the Reformation, was born about 1324, in Yorkshire, near the river Tees, in a parish whence he takes his name. He studied at Queen's college, Oxford, and then at Merton, in the same university, and distinguished himself by his attention to school divinity and the works of Aristotle, the most abstruse parts of whose writings he is said to have committed to memory. He also became intimately conversant with the civil and canon law, and with the laws of England; to which he added a diligent perusal of the Scriptures, and the works of the Latin fathers of the church. As early as 1356, he inveighed against the authority of the pope, in a treatise Of the Last Age of the Church; and, in 1360, he was active in opposing the encroachments and intrigues of the mendicant friars, who took every opportunity to establish their credit and power in the university. In 1361, Wickliff was appointed master of Baliol college, and was presented to a college living; and, in 1365, Simon Islip, the primate, constituted him warden of Canterbury college, which he had then newly founded at Oxford. An equal number of regular and secular priests having been placed as fellows in this college, by the founder, after his death disputes arose, which led to the expulsion of Wickliff and the other three secular members of the college in 1367. On an appeal to Rome, the measure received the sanction of the papal court—a circumstance which naturally exasperated the mind of the ejected warden against the pope. In 1372, he took the degree of D.D., and then delivered lectures on theology with great applause. Disputes at this period existed between king Edward III. and the court of Rome, relative to the homage and tribute exacted from king John; and the English parliament had determined to support their sovereign in his refusal to submit to the vassalage, in which his predecessors had been forced to acquiesce. A monk came forward as the advocate of the church; and Wickliff wrote a reply, which made him favourably known at court, and procured him the patronage of John of Gaunt, duke of Lancaster. In 1374, he was sent to Bruges, in Flanders, to confer with the pope's nuncio on the liberties of the English church; and the same year, the king gave him the valuable rectory of Lutter-worth, in Leicestershire; and he shortly after obtained a prebend in the collegiate church of Westbury, in Gloucestershire. He had now taken a decided part as to ecclesiastical politics; and having, in his writings, not only charged the bishop of Rome with simony, covetousness, ambition and tyranny, but also styled him antichrist, he was denounced as a heretic. Nineteen articles of alleged false doctrine, taken from his works, were transmitted to pope Gregory XI., who, in 1377, returned three bulls, addressed to the archbishop of Canterbury and the bishop of London, ordering the seizure and imprisonment of Wickliff, and requiring the king and government, if necessary, to assist in extirpating the errors he had propagated. Edward III. died before the bulls arrived, and the duke of Lancaster, who chiefly ruled the kingdom under his nephew, was the avowed protector of the refractory divine. Therefore, when he appeared at St Paul's church on the citation of the two prelates, he was accompanied by a vast concourse of people, and was supported by the duke of Lancaster and the earl marshal; and an altercation taking place between the noblemen and the bishops, the meeting was dissolved in a tumultuous manner. Wickliff afterwards attended at Lambeth palace, and delivered to the two prelates a defence or explanation of the propositions objected against him. The populace flocked together in crowds to protect him; and he was dismissed without any judgment taking place. Pope Gregory XI. dying in March, 1378, the commission he had issued expired, and Wickliff escaped further question for the present. In consequence, probably, of anxiety and fatigue, he was seized with a severe fit of illness; on his recovery from which, he applied himself anew, by writing and preaching, to his task of undermining the papal authority. The disputes then existing in the church, between the rival pontiffs, Urban VI. and Clement VII., furnished him with an opportunity for exposing the exorbitant pretensions of the court of Rome, of which he freely availed himself. Having, in some of his works, advanced some peculiar notions relative to the Eucharist, they attracted the notice and condemnation of the chancellor of the university of Oxford; on which Wickliff appealed to the king and parliament in 1382; but not being supported, as he had anticipated, by his former patron, John of Gaunt, he was compelled to submission; and he accordingly made a confession of his errors at Oxford, before archbishop Courtney, six bishops, and other clergymen, who had already condemned his tenets as heretical. The principal points on which Wickliff was condemned by the synod were, 1st. his deviation from orthodox language, respecting the presence of Christ in the sacrament of the altar; 2d. his doctrine, that a pope, bishop or priest, who is in a state of mortal sin, has no authority over the faithful, and that his acts are null; 3d. his assertion, that Scripture prohibits ecclesiastics from having temporal possessions; and, 4th. the position, that where contrition is sincere, confession to a priest is useless. His opinion respecting the Lord's supper is supposed to have nearly resembled that of Luther and his followers. A royal letter was procured by the primate, addressed to the chancellor and proctors, directing them to expel from the university and town of Oxford all who should harbour Wickliff or his followers, or hold any communication with them. He was, however, allowed to retire unmolested to his rectory at Lutterworth, where he continued to preach, and completed a translation of the Scriptures, in which he had engaged some years before. In 1383, he was seized with palsy; and the attack furnished him with an excuse for not making his appearance to a citation of pope Urban VI. A second paralytic stroke terminated his life on the 31st of December, 1384; but his doctrines, or rather his spirit, survived him; and however his successors might vary from him in their exposition of mysterious dogmas, they owed to him the example of an open attack, by a learned clergyman, upon the authority of the church and the jurisdiction of the supreme pontiff. Payne, one of his disciples, carried his system into Bohemia, where it flourished in spite of persecution, and awakened the zeal of Huss, who, although he did not adopt all the doctrines of Wickliff, seems to have shared his hostility to the Roman clergy. (See *Oldcastle*, *Huss*, and *Reformation*). "The new opinions on religion which now arose," says Mackintosh (History of England), "mingled with the general spirit of Christianity, in promoting the progress of emancipation, and had their share in the few disorders which accompanied it. (See *Wat Tyler*). Wickliff, the celebrated reformer, had now become one of the most famous doctors of the English church. His lettered education rendered him no stranger to the severity with which Dante and Chaucer had lashed the vices of the clergy, without sparing the corruptions of the Roman see itself. His theological learning and mystical piety led him to reprobate the whole system of wealth and worldliness, by which a blind bounty had destroyed the apostolical simplicity and primitive humility of the Christian religion. Viewing doctrines in this light, he might occasionally fluctuate in his feelings or language respecting them, without being liable to any grave imputation of inconsistency. This temper, however, adds to the difficulty of ascertaining his opinions: necessarily progressive, they could not have been the same at every period of life. It is possible, that if he sometimes yielded to authority, he might have been actuated more by sincere deference than by personal apprehension." The works of Wickliff are numerous, but most of them remain in manuscript, in the libraries of Oxford, Cambridge, and Dublin, the British museum, and Lambeth. Among those which have been printed, are Trialogus (1525, 4to.; republished at Frankfort, 1753, 4to.), containing a body of theology, in the form of a conversation between Truth, Falsehood, and Wisdom; Wickliff's Wicket, or a Learned and Godly Treatise of the Sacrament (Nuremberg, 1546, 8vo.; reprinted Oxford, 1612, 4to.); the Prologue to his Translation of the Bible, published by R. Crowley, under the title of the Pathway to Perfect Knowledge (1550, 12mo.); and his version of the New Testament (first edited by the reverend J. Lewis, London, 1731, folio, and more recently by Baber, 1810, 4to.). The version of the Old Testament remains unprinted. Wickliff was a bold and original speculator, both in religion and politics; and the influence of his writings on the state of public opinion in Germany, may be estimated from the proceedings against him at the council of Constance, after his death, when, his sentiments being condemned on the score of heresy, his bones were ordered to be taken up and burnt; and this sentence was afterwards (1425) executed. Among many biographical memoirs relating to him, may be mentioned the Life and Opinions of John de Wycliffe, principally from his unpublished Manuscripts, by Robert Vaughan (2 vols., 8vo., 1828), and Lebas's Life of Wickliff (1832).

WICKLOW, a martime county of Ireland. It is bounded by the sea on the east, by Dublin county on the north, by Kildare, Dublin and Carlow, on the west, and by Wexford on the south. It is about forty English miles long and thirty-three broad, and contains 781 square miles, or about 500,000 English acres. It contains fifty-eight parishes, of which forty-nine are in the bishopric of Dublin, six in the diocese of Loughlin, and three in that of Ferns. The county is divided into six baronies and half baronies. A great part of Wicklow is occupied with rocky mountains and bogs. In the north and west the mountains are bold and rugged, but in the east they are separated by fine wooded and romantic glens, such as those of Dargle, the Downs, the vale of Immalee, and Glendalloch. The central mountains consist of granite; and argillaceous schistus composes the lower hills. On the north is the remarkable chasm in a ridge of granite called the Scalp. The minerals of Wicklow are gold, lead, and copper. Native gold has been found on the north-east side of the mountains, Croughan Kenshela, in a stream which falls into the Ovoco. In 1796, £10,000 worth was found in pieces, one of which weighed nine, another eighteen, and a third twenty-seven ounces. Government then explored the mines, but no veins were found, and the works were abandoned. Lead has been wrought at Glenmaher and Glendalloch, at the latter of which places there were, in 1809, three smelting houses, and about 18,000 cwt. of bar iron were made weekly. Copper has been wrought to a considerable extent at Cronebane and Ballymurtagh. The works at Cronebane produced, in 1809, 3,000 tons of ore at a cost of £8,000. The works are now discontinued. Oxide of tin was found in the same stream in which gold occurred.

Wicklow has no river navigable within its limits. The Liffey rises in the north-west of the county. The Ovoco runs into the sea at Arklow, the Fartrey does the same at Wicklow, and the Slaney rises in the south-west of the county. Five of the streams produce fine waterfalls, the principal of which is at Powerscourt, 360 feet high. The chief lakes are Lough Bray, Lough Tay, Lough Dan, and the Loughs of the Seven Churches.

The climate of Wicklow is remarkably fine, especially on the east coast. The myrtle grows in such profusion as to be used for stable brooms, and grapes ripen out of doors. The principal crops are wheat, barley, oats, and potatoes. Summer fallow being little known, the wheat follows the potatoe crops, and sometimes it is taken after white crops, or upon the lea. The barley comes after potatoes or turnips. The crops are uncommonly abundant, though the soil is of a light quality. Dung, marl, and limestone gravel, are the chief manure. Scotch agricultural implements are now in general use. Most of the improved breeds of cattle have been introduced. The dairies, which are numerous, are employed chiefly in feeding veal for the Dublin market. In the north, early lambs are fattened to a considerable extent. The mountains of Wicklow afford good pasturage for sheep. The number of breeding ewes is about 20,000. The South Down are common, and many of the native flocks have been crossed with them. Merinos have also been introduced.

The principal manufactures of Wicklow are woollen and cotton goods. Besides the coarse woollens for common use, flannel is manufactured to a great extent. From 5,000 to 7,000 pieces were sold annually before 1808 at the flannel sale at Rathdrum. The cotton manufacture was then carried on with much spirit at Stratford-upon-Slaney. The linen manufacture has always been inconsiderable. The principal towns, &c. are Wicklow, the county town, Baltinglas, Blessington, and Carysfort, which were formerly burghs. The villages are Rathdrum, Bray, Arklow, Stratford-upon-Slaney. Wicklow is boldly situated on the declivity of a lofty mountain. The church, which has a high square tower, is pleasantly situated on a lofty eminence. The jail, the court-house, and the market-house, are good modern edifices; and about a mile to the south-east of the town, are two lighthouses. Population of the county in 1831, 122,301.

WICQUEFORT, Abraham de, an eminent publicist of the seventeenth century, was born at Amsterdam, in 1598. The early part of his life was spent in Germany; and the elector of Brandenburg, in 1626, appointed him to take charge of his interests at the court of Paris. In this capacity he continued to reside at the French capital till 1658, when a suspicion arising of his having made improper disclosures to the states-general, he was arrested at the instance of cardinal Mazarin, and sent to the Bastile. After a twelvemonth's imprisonment in this fortress, he obtained liberty to return to Holland. De Wit, then at the head of the Dutch government, gave him the appointment of historiographer to the states, and induced him to undertake the task of writing a history of his native country, while the duke of Brunswick-Lunenburg made him his resident at the Hague. But he was arrested and condemned to perpetual imprisonment, for conveying intelligence to the enemies of his country. By the courage of one of his daughters, however, he escaped, after a confinement of four years, and fled to Zell, in 1679. Here he occupied himself for two years in unavailing attempts to procure a reversion of his sentence, and is said to have died of chagrin, in 1682. Besides his History of the United Provinces, De Wicquefort was the author of a work on diplomacy, entitled *L'Ambassadeur et ses Fonctions* (4to., 2 vols.), and some translations of travels from the Spanish and German languages into Dutch.

WIDDIN, or VIDIN; a fortified town, and capital of a sangiacat in Rumelia, on the right bank of the Danube, with 25,000 inhabitants. The sultan, Selim III., having formed the design of dissolving the corps of janizaries, and supplying their place by troops organised and disciplined according to the European military system, proceeded to execute his plan, by successively disbanding the different frontier garrisons. The order to discontinue their pay was the signal of insurrection to the garrison of Widdin, commanded by the bold and artful Paswan Oglu. His father had been put to death by the grand vizier, jealous of his power and covetous of his wealth; and Paswan Oglu had been himself detained as a prisoner. Eager for revenge, he seized the opportunity which now offered itself, and, at the head of the disbanded janizaries, chased the pacha from the town. The inhabitants, discontented with the new impositions that had been made, to meet the expenses of the new military system, readily joined him; and he now proceeded to levy contributions for the support of his authority in the neighbouring districts. He also won over the Greeks by promises of religious freedom. In the first campaign (1797), he was almost constantly successful; and the following year he succeeded in compelling the capudan pacha to raise the seige of Widdin, and to retreat, leaving the northern provinces at his mercy. The Porte was finally compelled to yield to his demands, and, in 1798, conferred upon him the dignity of pacha, with the government of Widdin, which he held till his death in 1807.

WIDGEON; a species of duck, which in winter frequents our inlets of the sea and fresh-water lakes. The American widgeon is most abundant in Carolina, where it frequents the rice plantations, and is much complained of by the planters. It is often called *bald-pate*, from the white on the top of the head. It is a constant attendant on the canvass-back duck, by the aid of whose labours it contrives to make a good subsistence, and with whom it lives in a state of perpetual contention. The front and crown are cream-coloured; a band of deep glossy green extends from the eye backwards; the throat, chin, and sides of the neck are dull yellowish-white, thickly speckled with black; the breast and hind part of the neck hoary bay; immediately below the wing-coverts is a large spot of white.

WIDMER, Samuel, a distinguished mechanician and manufacturer, the nephew of Oberkampf, and his successor, was born in 1767, in the Aargau, was instructed by Oberkampf, and studied much himself. He applied Bertbollett's chemical process for bleaching linen on a large scale, and, in 1792, invented the mode of printing calico with copper cylinders; but the revolution prevented him from applying this invention to a considerable extent immediately. The machine was capable of doing as much as twenty-four workmen. He then invented a machine for engraving, and, in 1809, the method of beating the water in the dyeing kettles by steam. After this he discovered a dye (*le vert solide d'une seule application*), for which the royal society in London had offered a prize of £300. Until then, the *vert solide* could be used only by a double application of colour, either of indigo upon yellow, or of yellow upon indigo. Widmer did not communicate his invention to the royal society, and, of course, did not receive the prize. He afterwards visited England, where Sir Joseph Banks received him with much attention. His last invention was a machine for bleaching linen, which is called *hydrocyclephore*, because the water passes in a circular course, and at a boiling heat, into and out of the tin vessels. Louis XVIII. gave him the order of the legion of honour. He died in 1824. His private character was that of a charitable and generous man.

WIED. See *New Wied.*

WIELAND, Christopher Martin, was born in the town of Biberach, in Suabia, Sept. 5, 1733, where his father, a Protestant minister, gave him an excellent education. The talents of the young Wieland early attracted the attention of his teachers. In his twelfth year, he composed Latin and German verses. In his fourteenth year he was sent to Klosterbergen, near Magdeburg. Here he penetrated deeply into the spirit of the ancients. Here, also, he became acquainted with the works of Steele and Addison, though in very imperfect translations, and Shaftesbury made a lasting impression upon him. He also studied Voltaire and D'Argens. In his sixteenth year, he left Kloste rgen, and lived a year and a half with a relation Erfurt, who prepared him for the university. In 50, he returned to his native city, where he fell love with Sophia von Guttermann. In the au- of 1750, he went, against his inclination, to university of Tübingen, to study law. He con- ued to study the literature of his own and foreign ntries, and wrote, in 1751, his Ten Moral Let- s, addressed to Sophia, which met with a very vourable reception. He also wrote, at this time, dactic poem called Anti-Ovid, an unimportant duction. In 1752, he returned to Biberach, then went to Zürich as a literary companion to dmer. Here he read the works of the authors o then gave a new impulse to German litera- e—Hagedorn, Gleim, Haller, Schlegel, Gellert, opstock, Sulzer, and others. Zürich itself con- ned several distinguished authors. The example Bodmer, a hasty writer, had much influence on habits of composition at this time, as appears the number of his productions at this period. 1756, the seven years' war (q. v.) broke out. eland was inspired by the deeds of Frederic the t, and intended to write a poem, exhibiting ideal of a hero, for which purpose he chose the y of Cyrus. The first five cantos appeared in 7, and the second edition of them in 1759: but poem remained unfinished. After some unsuc- ful attempts in dramatic poetry, he again turned talent to the more congenial field of Grecian y, and published Araspes and Panthea, an epi- e from the Cyropædia of Xenophon. In 1754, left Bodmer's house, became a tutor, and, in 60, returned to his native town. Various cir- umstances, among others that of finding the object of his early love married, made him dissatisfied with Biberach. He now undertook a task not very congenial to his previous habits, accustomed as he was to the study of Greek, Roman, and French literature, and naturally inclined to light and gay subjects. He translated twenty-eight of Shakspeare's plays, (1762—68, 8 vols.) Eschenburg afterwards added the fourteen remaining ones. Wieland soon found a home in the house of count Stadion, who had been minister of the elector of Mayence, was a man of considerable knowledge, and an enemy to all kinds of fanaticism. His intercourse with this new friend produced a decided change in his character. He had previously been prone to religious mysticism, but exhibited, in his subsequent productions, tendencies of an opposite character. Count Stadion's library was particularly rich in French and English literature, and contributed not a little to this change of sentiment in Wieland. He has often been reproached with a predilection for subjects of a voluptuous character, in his subsequent works. It is impossible to exculpate him entirely from this charge; but it ought to be stated that his own life was wholly free from the stain of licentiousness. The first production of his bearing the impression of 'Greco-Gallic sensuality, was the tale of Nadine, which he himself calls a composition in Prior's manner. This was followed, in 1764, by the Adventures of Don Sylvio of Rosalva, or the Victory of Nature over Fanaticism. In this, Don Quixote was his model; but the work of Wieland was far inferior to that of Cervantes in plan and execution. In 1766 and 1767, appeared his Agathon, which established his reputation. It had occupied him long, and will long preserve his memory. Love continually employed his thoughts, and many fragments of poems by him, on this subject, exist; but his chief work devoted to it is Musarion (1768), a production distinguished for grace, ease, and harmony, which he himself calls a philosophy of the graces. In 1770, he wrote the Graces; and the new Amadis, in 1771, a poem which celebrates the triumph of intellectual over mere physical beauty. The poet treated this subject again, in the latter part of his life, in his Crates and Hipparchia. In 1765, Wieland married, and, in 1769, was appointed *professor primarius* of philosophy at the university of Erfurt. From this time, he no longer occupied himself exclusively with amatory poetry. In his Cupid Accused, he defends this kind of poetry; and in the Dialogues of Diogenes of Sinope (1770), he gave a general vindication of his philosophical views. Under the title Contributions to the Secret History of the Human Understanding and Heart, from the Archives of Nature (1770), he wrote against Rousseau. The many improvements and noble plans of Joseph II. of Austria gave occasion, in 1772, to his Golden Mirror. In 1772, he went to Weimar, in consequence of an invitation from the duchess Anna Amalia of Weimar, to superintend the education of the two princes, her sons. Here he had leisure for literature; and a moderate salary, and the promise of a pension for life, set him at ease. He now turned his attention to dramatic poetry, and wrote his Choice of Hercules, and his Alceste. He also undertook the superintendence of the German Mercury, a monthly journal, which he continued to edit to the end of his life. His views, as exhibited in this journal, showed too much of the narrow conventional spirit of French criticism, and he was, therefore, attacked by Göthe and Herder. The first wrote a satire against him under the title of Gods, Heroes, and Wieland, which Wieland answered with his characteristic mildness. Göthe and Herder were soon drawn to Weimar, where the duchess Amalia formed a galaxy of talent and genius, such as has seldom been witnessed. In company with them, Wieland here laboured with great activity for more than twenty years. His philosophy breathes the spirit of Socrates, sometimes with a mixture of that of Aristippus. He has enriched German literature with works which have made known to his countrymen the merits of the French and English writers. His historical productions do not constitute large works, but they please by the lively imagination, knowledge of languages, sound judgment, and benevolent spirit which they display. These graver occupations did not diminish his poetical fertility, which appeared to great advantage in his History of the Abderites (1773), a delightful work, in which the muse of wisdom appears disguised in the garments of satire. He also wrote tales, partly after foreign originals, partly from his own invention. But Oberon, a romantic epic, is the most successful of his larger works, though the tone and the form are both liable to censure. In addition to his original works, Wieland prepared translations of Horace and Lucian; and, though the scholar will often meet with paraphrases which he may not like, these translations have been of much service to the public at large. Wieland himself declared his Letters and Commentaries on Horace those of his works on which he placed the greatest value, and from which his head, heart, taste, conceptions, and character could be best known. From his constant study of Lucian originated (1791), an original work, Peregrinus Proteus, to which his Agathodæmon may be considered a pendant. A uniform edition of his works was published at Leipsic, in two editions, 4to. and 8vo., 36 vols., with six supplementary volumes, 1794, et seq. (new edition by Graber, begun in 1820; a pocket edition, in 16mo., 51 vols., was begun in 1824). The author was enabled, by the sale of this edition of his works, to buy an estate, called Osmannstädt, near Weimar, where he intended to spend the evening of his life. As his manner of living was simple, his moderate income was adequate to his wants, though his wife bore him fourteen children within twenty years. From 1798 to 1803, he continually lived in Osmannstädt, and occupied himself with literary labours, among which his Attic Museum should be mentioned. Aristippus and some of his Contemporaries also belongs to this period. In 1803, he sold his estate, from views of economy, and lived again in Weimar, where he now found Schiller, with whom he soon became intimate. After the death of the duchess Amalia, of Schiller, and many of his other friends, he sought to divert his melancholy by literary labours. We owe to this circumstance his translation of Cicero's Letters. The emperor Alexander gave him the order of St Anne, and Napoleon that of the legion of honour. He was elected a member of the French institute, and died Jan. 20, 1813: his wife had died in 1801. The remains of both rest in the same tomb, which bears an inscription, composed by Wieland himself, commemorative of the love which had united them throughout life. Wieland became, at a late period of his life, a freemason.

WIELICZKA; a town of Austrian Poland, in the kingdom of Galicia, seven miles south-east of Cracow, remarkable for its salt mines, which extend not only under the town, but to a considerable distance on each side. The mines were worked as early as the middle of the thirteenth century; but, notwithstanding the quantity of salt which has been taken out, their treasures appear as inexhaustible as ever. They are situated at the outskirts of the Carpathian mountains, and descend to the depth of about fifteen hundred feet. The miners commonly go down on ladders; but the visitor may have the accommodation of regular stairs cut in the salt. At a depth of three hundred feet on the first floor, is St Anthony's chapel, hewn out of the salt rock. In the upper galleries, where the mining was carried on irregularly, the roofs of the great caverns excavated have often fallen in, and it has become necessary to prop them up with wood; but in the lower galleries, where the operations have been subsequently carried on, and conducted with more regularity, large masses are left standing, which serve as pillars to the roof. The workmen are divided into three bands, which relieve each other alternately, each spending eight hours in work, and passing the rest of the time above ground with their families, which do not, as has been asserted, reside in the mines. The salt is cut out in long narrow blocks, and then, after being broken into smaller pieces, is packed up in barrels. There has been much exaggeration in regard to these mines, some travellers speaking of them as a subterraneous city with extensive streets, buildings, &c. One of the caverns, called the *great hall*, contains lustres hanging from the roof, and all the curiosities, crystals, petrifactions, &c., which have been found here. Seven hundred thousand quintals are annually raised, which, with two hundred thousand quintals raised at Bochnia, in the vicinity, yield a net amount of £180,000 annually. There are three qualities of salt obtained here. The worst sort is mixed with clay, and has a greenish appearance. The best appears in the form of cubic crystals, and is of a dark-grayish colour, with a mixture of yellow. The salt-works formerly belonged to Poland, but have been the property of Austria, with a slight intermission, since 1772. They are supposed to be connected with the salt formation in Walachia, and thus to have an extent of upwards of 500 miles. See Fichtel's *History of the Salt Mines in Transylvania* in German, Nuremberg, 1780.

WIER'S CAVE. See *Cave*.

WIFE. See *Husband and Wife*.

WIG is derived from the Latin *pilus* in this way:—*pilus*—Spanish *pelo*, whence *peluca*; French *perruque*; Dutch *peruik*; English *perwick*, *perry*, *periwig*, shortened to *wig*. The use of false hair is traced back to the ancients. Xenophon says that Astyages wore a peruke about the fiftieth Olympiad, in which the hair was thick. They were afterwards worn by several of the Roman emperors. Lampridius relates of the wig of Commodus, that it was tinged with fragrant colours and powdered with gold dust. After this period, we find no trace of wigs in history till the sixteenth century, when John, duke of Saxony, wrote to Arnold von Falkenstein, in Coburg, to order a handsome wig to be made in Nuremberg, "but privately, so that it may not be known to be for us, and of a flaxen colour and curled make, of such a fashion, moreover, that it may be conveniently set upon the head." France afterwards became the peculiar country of wigs, whence they spread to all parts of Europe. Henry III., (1575—89), having lost his hair by disease, caused by his debaucheries, covered his cap, such as was then in general use, with false hair. Under Louis XIII., (1610—43), they came into common use. Even those who had no necessity for them, wore them because it was fashionable. Their form was very various. Some account of them may be found in a learned work by Nicolai, On the Use of False Hair (*Ueber den Gebrauch der falchen Haare*). Modern refinement has abolished this unnatural ornament, and, where wigs are needed, care is taken to make them, as far as possible, resemble nature. Wigs, with all their appurtenances, form a very curious item in the history of fashion; and the tenacity with which men have clung, and even now cling, to this article, which, like the cravat, is neither comfortable, handsome, nor healthy, shows, in a striking manner, the force of habit. We allude, of course, only to those wigs which are worn merely for fashion's sake, and not to those imitations of the natural hair which serve as coverings for baldness. A history of wigs, with illustrative plates, would be not an uninteresting work. When people began to appear without wigs, it was considered the height of vulgarity. The same was the case when people left off hair-powder and queues. The French revolution gave the death-blow to the general use of wigs. The disuse of them in the case of particular classes was considered a flagrant breach of decorum. A clergyman in Prussia, named Shultze, was involved in serious difficulties, because he appeared with a queue and without a wig in the pulpit, and the government was obliged to protect him. Of Jovellanos it is mentioned that he was the first Spanish judge who appeared without a wig; and the influence of the prime minister, count Aranda, was required to support him in this innovation, which, strange to say, has even yet not extended to the English judges, who, as well as the counsellors, still appear in wigs; and what wigs! Whoever has seen them will not be likely to forget them. It was considered a bold step in lord Brougham when he dared to appear with a smaller wig than his predecessors in the office of chancellor. A late English traveller (captain Basil Hall), among other melancholy instances of the universal ascendancy of the democratic principle in the United States, deplores the want of wigs on the heads of the judges. How must he have felt when the bishop of Carlisle appeared, in 1830, in the house of lords without a wig, and the bishop of Oxford followed his example.

WIGAN; a borough and market-town of England, in the county of Lancaster, situated near the small river Douglas, thirty miles south of Lancaster. It is a paved town, and has long been so, having obtained a patent for the purpose of having it done, being dated in the 7th of Edward III.; it is described by Leland in his Itinerary, as "a paved town as big as Warrington, but better builded." Many of the houses are old and ill-built, but two new streets have been recently formed, in which the houses are better. It is supplied with gas and water by joint stock companies, the act of parliament for the gas company having been obtained in 1823, and that for the water company in 1761. An act of parliament was obtained in 1720, under the authority of which the Douglas was made navigable to its junction with the Ribble. Ample canal communication is supplied by means of the Liverpool and Leeds canal, along which goods are sent, not only to these two places, but also, by means of their branches, to most parts of England. The principal manufactures are those of calico, fustians, and other cotton goods, linens, checks, &c., besides the spinning of cotton yarn to a great extent. There are also manufactories of edge-tools, brass articles, spades, and other agricultural implements. In these many steam engines are employed. Coal is found to a considerable extent in the vicinity, and is sent along the canal to Manchester and other places. It returns two members to parliament. Population in 1821, 17,716; in 1831, 20,774.

WIGHT, Isle of; an island of England, on the coast of Hampshire, from which it is separated by a channel varying in breadth from two to seven miles. From the eastern to the western angle it measures nearly twenty-four miles, and from the northern to the southern about twelve. Its form is that of an irregular ellipsis, and it has been compared to the shape of a turbot. It contracts at its two extremities, and is very narrow towards the west. The entire circumference is generally set down at about sixty miles, and the island contains from 120,000 to 130,000 acres of land, of which a great portion is very productive. The high downs are excellent sheep-walks, and the farms are generally so contrived as to unite pasture with arable land. An old boast of the peasants is, that this beautiful island yields seven times as much as its inhabitants consume. At a very early time it exported a considerable quantity of wool. Through the middle of the island extends a range of high hills, affording commanding views over every part of the isle, with the ocean on the south side, and on the north the beautiful coast of Hampshire. The general characteristics of the scenery by land are gracefulness and fertility, the central range of downs, though at some points bold, not attaining to sublimity. It offers that blending pasture and pastoral life, with arable land, farming, and gardening, which is always so agreeable to the eye and imagination. In former times the isle was uncommonly rich in forest scenery, and although some of the woods have wholly disappeared to supply timber to the dock-yards of Portsmouth, and others have been much thinned, the country is still well sprinkled with trees. The almost invariable recurrence of fine woodland scenery, in connexion with glimpses of the sea, is a peculiar feature of the Isle of Wight. Water is not wanting. Besides the rivers Yar and Medina, which flow right across the island from south to north, and admit vessels with their snow-white sails far inland, among trees and hills, there are numerous streams and springs of less note scattered over the country. The land around the coast is in some parts very high, and frequented by immense numbers of marine birds, as puffins, razor-bills, will-cocks, gulls, cormorants, Cornish-choughs, daws, starlings and wild pigeons, some of which come, at stated times, to lay their eggs and breed, while others remain there all the year. The higher parts of the isle are composed of calcareous matter, of a chalky nature, incumbent on schistus. The limestone is burned for manure. Native alum is found in large quantities in Alum bay: pipe-clay is likewise very plentiful in different parts of the isle; and chalybeate springs have been found in different parts of the island. The trade of the Isle of Wight is flourishing; the harbour of Cowes is particularly convenient for shipping and unshipping merchandise. (See *Cowes*). The natural division of the island is very clearly marked; a centrical chain of hills and downs cuts it into two nearly equal parts, the one being north and the other south. The southern part, which is farther from the Hampshire coast, and much the more picturesque, bold, and secluded of the two, is commonly called the "back of the island." Another natural division into east and west is formed by the river Medina, which, rising at the foot of St Catherine's down, traverses the island, and falls into the Solent Strait at Cowes. The country to the east of the river, called East Medina, and that on the other side, called West Medina, are nearly equal in extent of territory. The whole of the island is politically subdivided into thirty parishes, fourteen of which are to the east of the river and sixteen to the west. The entire population of the Isle of Wight, as shown by the census of 1831, was 35,363 persons. Previously to the passing of the Reform Bill the isle returned six members to parliament; that is to say, two for the borough of Newport, two for Yarmouth, and two for Newtown; but since that great constitutional change, the Isle of Wight, being detached from Hampshire and becoming a county of itself, returns one member as such, and only two borough members for Newport, Yarmouth and Newtown being both disfranchised. Newport, which is now the capital, though Carisbrook enjoyed that honour in old times, contains a population of above 4,300 persons, and is a place of considerable trade and activity.

WIGTON; a small royal burgh of Scotland, in Wigtonshire, pleasantly situated near the north side of the Bladenoch water, at its junction with the Cree or bay of Wigton, at the distance of 105 miles from Edinburgh, and fifty-eight from Dumfries. Population of the burgh and parish in 1831, 2337.

WIGTONSHIRE · a county occupying the south-western extremity of Scotland, forming the western part of the ancient district of Galloway. It is bounded on the east by the stewartry of Kirkcudbright, or Eastern Galloway, also by Wigton bay; the Irish sea limits it on the south and west; and it has Ayrshire on the north. The shire extends between twenty-eight and twenty-nine miles from north to south, and between thirty and thirty-one miles from east to west. In this extent is comprehended the large bay of Luce, which indents it throughout an extent of fifteen miles on the southern side; and Loch Ryan, an arm of the sea, indents it on the northern side eight and a half miles. The bay of Luce, by so deeply indenting the land, forms two peninsulæ, and these projections have been long known by the Celtic name of *the Rhinns of Galloway*. The peninsula on the east receives the local name of *the Machers*. The superficial contents may be deemed about 309,760 statute acres.

The shire of Wigton rests upon a southern exposure: and its waters generally descend to the Irish sea. The climate is moist, with winds from the south-west, which prevail during the greatest part of the year, and usually bring with them rains; yet when proper attention is used by the agriculturist, the moisture of the climate is but seldom injurious to the products of the earth. Snows seldom lie long; and frosts are not usually severe, or of long endurance. This shire is one of the lowest districts in Scotland; and its diminutive hills are generally pretty free from the obtrusion of rocks. The best lands lie near the shore; the inland divisions being more elevated and largely mixed with heath and moss. The shire has no considerable rivers. The chief are the Cree, the Bladenoch, and the Tarf, with a few of smaller size. The greatest part of the soil of the district is of a hazel colour; and is of that species, which is sometimes termed a dry loam, though often it inclines to a gravelly nature. It principally lies upon a bed of *schistus*, and primary strata. In the northern part of the Rhinns, sandstone occurs. Quarries of slate have been found of different qualities. There is no coal, at least for any useful purpose; and although there is plenty of iron ore, it is of little value from the absence of coal. Lead mines were formerly wrought with the greatest success.

Wigtonshire comprehends seventeen parishes, and three royal burghs, Wigton, Whithorn, and Stranraer, with several thriving villages and burghs of barony, as Newton-Stewart, Garliestown, Glenluce, Port-Patrick, &c. It has a number of small seaports or natural harbours, chiefly in the western peninsula. It likewise possesses a number of splendid mansions, the seats of its nobility and gentry. In 1821, the population was 15,837 males, and 17,603 females; total 33,240: in 1831, 17,078 males, and 19,180 females; total 36,258.

WIGWAM; a name given by the English to the huts or cabins of the North American Indians. This word, as we learn from Eliot's Indian Grammar (printed in 1666), is a corruption of the Indian compound *wekuwom-ut*, which signifies, *in his house*. The corresponding word in the Delaware language is written by the German missionary Mr Zeisberger, *wikwam*.

WILBERFORCE, William, a distinguished philanthropist, whose exertions to procure the abolition of the slave-trade, give him a high rank among the benefactors of the human race, was born at Hull, in Yorkshire, 24th August, 1759, of which place his grandfather had been twice mayor. His father died when he was young, and, in 1774, he was sent to St John's college, Cambridge, where he formed an intimacy with Mr Pitt. Mr Wilberforce came into a good fortune, and was elected member of parliament for Hull, in 1780. During this parliament, he did not take any very active part in politics. He was also elected in 1784, and, owing to the partiality of the people for Mr Pitt's friends, was also chosen for the county of York: he therefore made his election for that county. In 1787, he brought forward a motion for the abolition of the slave-trade, and presented a great number of petitions in favour of that measure. The minister spoke in favour of the abolition, but suffered the motion to be lost. The next year, Mr Wilberforce being ill, Mr Pitt brought on the motion, and the question was carried without a division; but it went no further. It was a singular circumstance, that Mr Pitt, whose power was then at its zenith, could carry every measure but this. Mr Wilberforce had much to contend with before he completed his object; and all he could do was to procure some regulations favourable to the slaves during their passage. The condition of the slaves in the West Indies was, however, greatly improved. While Mr Pitt was minister, every trick was tried to avoid the question, till Mr Fox and his friends succeeded to power, when, to their honour, he and his friends carried the measure. The influence of Mr Wilberforce in the house of commons was extraordinary; and, at one time, during the French war, an appearance of defection on the part of Wilberforce and his friends induced Pitt to open a treaty with France. In 1812, after having sat for Yorkshire in six parliaments, he withdrew from the representation; and, until 1825, when he retired from parliament, he sat for the borough of Bramber, as the nominee of his kinsman, lord Carrington. From the time of his retirement, he lived principally at Highwood Hill, a small estate near London. About 1831, heavy losses, sustained through the commercial disappointment of his eldest son, compelled him, with his wife, to seek an asylum in the parsonages of two of his sons, who were both in the church. He died on the 28th July, 1833, shortly after the government plan for the total abolition of slavery in the British colonies had passed in the house of Commons. His remains were interred in Westminster abbey, and his funeral was attended by distinguished men of all parties. In 1838, his memoirs were published by his sons, in 5 vols., 12mo., containing extracts from his diaries, journals, and letters. During his lifetime, Mr Wilberforce published a Practical View of the prevailing Religious Systems of Professed Christians in the higher and middle classes of the Country contrasted with real Christianity (1797); an Apology for the Christian Sabbath (1799); a Letter on the Abolition of the Slave Trade (1807); and Substance of his Speeches on the bill for promoting the Religious Instruction of the Natives of British India (1813).

WILD RICE (*zizania aquatica*); a large kind of grass, which grows in shallow water or miry situations, in many parts of North America. The stem is seven or eight feet high; the leaves broad and scattering; and the flowers disposed in a large terminal panicle, spreading at the base and spiked at the summit. The female flowers are awned, upright, and form the terminating spike, while the male are nodding, and placed at the extremities of the spreading branchlets; the stamens are six in number; the seeds are about half an inch long, slender, farinaceous, and afford a very good meal, which is much used by the Indians in those districts where the plant abounds. The seeds drop off with the slightest blow; and the Indians collect them by bending the plants, and beating them over their canoes. The wild rice grows in the Northern and Middle States, and in Canada. It is extremely abundant along the muddy shores of the Delaware, and forms the chief attraction for the immense flocks of reed-birds and black-birds which annually resort thither in the autumn. Owing to the different features of the Chesapeake and Hudson, it is rare on their shores, and on most of their branches. It is most abundant in the north-west, being found as far as latitude 51°, on lake Winnipeg; but it does not exist on the Missouri, or west of the St Peters, a branch of the Upper Mississippi. This plant, may, perhaps, at some future day, exert considerable influence on the destiny of the human race, and render populous many districts in the extreme north which are now considered uninhabitable. Another and larger species of *zizania* is found in the more southern parts of the United States, which is distinguished by having the male and female flowers intermixed.

WILHELMSHOHE (*William's Height*), formerly *Weissenstein*, and during the brief existence of the kingdom of Westphalia, called *Napoleon's Höhe*, is a castle belonging to the elector of Hesse-Cassel, a league distant from Cassel, the usual summer residence of the monarch. Art and nature have vied in adorning it. An alley of linden-trees leads from Cassel to the foot of the elevation on which the palace stands. The most remarkable objects in this place are, 1. The palace of the elector. 2. The great fountain, a column of water which may be made to rise 190 feet high. Its diameter is nine inches. 3. The great cascade. The water falls 104 feet, in a stream eighteen feet wide and one foot in thickness. 4. The Carlsberg (Charles mountain), with its cascades, erected, in 1701, by the Italian architect Giov. Franc. Guerneri. Here is a grotto, in front of which is a basin 220 feet in diameter. The water falls over the grotto into the basin, and thence in a triple cascade, 900 Rhenish feet long and 40 feet wide. At intervals of 150 feet are basins. On both sides of the cascade, 842 steps lead up to the palace, called, on account of its form, the *octagon*. At the foot of this building is a basin 150 feet in diameter, in which a rock, lying as if it had fallen from above, covers the body of the giant Enceladus. His mouth is seven feet wide, and sends forth a mass of water 33 feet high. In the back-ground of the basin is a grotto, on one side of which is a centaur, on the other a faun, both of which blow through copper horns as long as the water plays. There is also another basin, provided with a grotto and a statue of Polyphemus, which plays when the water flows. Before this grotto is the artichoke basin, owing its name to an enormous artichoke of stone, from the leaves of which twelve fountains spring, of which that in the centre rises forty feet. The giant castle (as the palace is called) is remarkable in various respects. It has 192 Tuscan columns, each 48 feet high, which support the third story. On a platform extending over the whole building, stands a pyramid 96 feet high, at the summit of which, on a pedestal eleven feet high, stands the colossal statue of the Farnese Hercules, called, by the people of the neighbourhood, the *great Christopher*. It is of copper, thirty-one feet high. In his club there is sufficient room for twelve men. There is a door in it, from which a splendid view is presented of the surrounding country. Among the other curiosities are a remarkable bridge, a romantic cascade, a Chinese village, &c.

WILKES, JOHN, a political character of temporary celebrity, born in London, in 1727, was the second son of an opulent distiller. After preliminary education, under a dissenting minister at Aylesbury, he was sent to finish his studies at the university of Leyden. He returned to England in 1749, with a considerable portion of classical and general knowledge, and soon after married a lady of large fortune. One daughter was the fruit of this union, which did not prevent him from living a licentious life; and he soon after finally separated from his wife. In 1757, he obtained a seat in parliament for the burgh of Aylesbury, and involved his affairs by the expenses of the election. He went into parliament under the auspices of earl Temple, through whose interest he was also appointed lieutenant-colonel of the Bucks militia. His early career was by no means conspicuous; but on the secession of earl Temple and Mr Pitt from the ministry, in 1762, he attained considerable reputation by some pamphlets attacking the administration, and more especially the earl of Bute. He extended his hostility not only to that nobleman, but to his country, and, by his paper entitled the North Briton, rendered antipathy to Scotland prevalent in England. These papers hastened the resignation of lord Bute, which took place in April 1763. In the same month appeared the famous No. 45 of the North Briton, which commented on the king's speech in such caustic terms, that a prosecution was determined upon. The home secretary, in consequence, issued a general warrant, or one in which particular names are not specified, ordering the apprehension of the authors, printers, and publishers of the paper in question. On this warrant Wilkes, among others, was apprehended; but he asserted the illegality of the warrant, and refusing to answer interrogatories, was committed to the Tower. Some days after, he was brought, by writ of habeas corpus, before chief justice Pratt, of the common pleas, who declared the judgment of that court that general warrants were illegal, and he was consequently discharged, amidst the general rejoicings of the populace. Aided by lord Temple, he brought actions against the secretary of state, under secretaries, messengers, and every person employed in the transaction, in which the prosecutors obtained damages, which were paid by the crown. Not content with this escape, he reprinted the obnoxious North Briton, which produced a regular prosecution to conviction; and, in the meantime, having fought a duel with a Mr Martin, in which he was dangerously wounded, he withdrew to France. The result of his non-appearance to meet the prosecution was expulsion from the house of commons. A second charge was also brought against him for printing an obscene poem, entitled an Essay on Women, and he was found guilty of blasphemy as well as libel, added to which, his continued absence, produced outlawry, and thus the ministerial triumph was complete. He in vain made attempts to procure the reversal of his outlawry; but trusting to his popularity, he ventured to return, on a change of ministry, and to deliver himself into custody. Notwithstanding his imprisonment, he was elected to represent the county of Middlesex, by a vast majority; and soon after his outlawry was discussed at various hearings, and solemnly reversed; but this did not procure his liberty; and he was condemned to an imprisonment of twenty-two months, and a fine of £1000. In 1769, in consequence of a pamphlet written by him, in censure of a letter from the secretary of state to a magistrate, advising the employment of the military in repression of the riots which were the result of Mr Wilkes's confinement, he was again expelled the house. This measure being followed by his immediate re-election, he was declared incapable of becoming a member of the existing parliament, and colonel Luttrell set up against him, who was declared the sitting member for Middlesex at the next election, although the votes for him did not amount to a fourth part of those for Wilkes—a decision which produced a great sensation, and excited disgust even among those who disliked the person thus opposed. In return for the loss of his seat, he was elected alderman of the ward of Farringdon Without, and in this magistracy displayed his usual spirit against illegal authority. The house of commons having summoned some printers in the city before them, for publishing their speeches, they neglected to attend, when a royal proclamation was obtained for apprehending them; and when, on its authority, one of the printers was carried before alderman Wilkes, he, who deemed the apprehension a breach of the privileges of the city, discharged the printer, and ordered the captor to give bail. The lord-mayor Oliver, and alderman Crosby, acted the same way in regard to two other printers, for which, being members of the house of commons, they were committed to the Tower, while Wilkes being summoned to the bar of the house of commons, instead of obeying, wrote to the speaker, and claimed his seat. The house was now sensible of the difficulty in which it had involved itself, and found no better expedient to save its credit than an adjournment beyond the day on which he was ordered to attend. In 1772, he was chosen sheriff, and, in 1774, elected mayor; and he knew so well both how to acquire and to retain popularity, that, on the dissolution of parliament, in the same year, he was once more chosen member for Middlesex. In parliament he was a strenuous opposer of the measures which led to the American war, but did not render himself very conspicuous as a speaker. In 1779, he was chosen, by a great majority, chamberlain of London, which lucrative office, so necessary to his broken fortune, he held for the remainder of his life. In 1792, upon the dismissal of the North administration, the obnoxious resolutions against him were, on his own motion, expunged from the journals of the house; from which time, although, in 1784, once more re-elected member for Middlesex, he deemed himself "a fire burnt out." He died December 26, 1797, aged seventy; for some years previously to which event he was comparatively forgotten. Wilkes, as a writer and speaker, did not reach beyond mediocrity. His private character was very licentious, but he possessed elegant manners, fine taste, ready wit, and pleasing conversation. His Letters and Speeches were published by himself in 1787; and much light is thrown upon his conduct by the Letters from the Year 1774 to the Year 1796, to his Daughter (1804, 4 volumes 12mo.). His correspondence, in 5 volumes, was also published, with a Memoir by Almon, in 1805 (5 volumes.)

WILKIE, William, the author of an epic poem which obtained a temporary celebrity, was born in the county of Linlithgow, Scotland, on the 5th Oct., 1721. His father, a small farmer, contrived to give him a liberal education, and at the age of thirteen, he was sent to the university of Edinburgh. Before he completed his academical course, the death of his father obliged him to pay attention to the farm, which was the only inheritance of himself and three sisters. He still, however, prosecuted his studies, and was admitted a preacher in the church of Scotland. In 1753, he published his Epigoniad, an epic, which met with much success, especially in Scotland; and, in 1759, he was chosen professor of natural philosophy in the university of St Andrews. After settling in St Andrews, the poet purchased some acres of land, and resumed his farming occupations, in which he succeeded so well as to leave at his death property to the amount of £3000. Sometime after his appointment to the professorship, the university conferred on him, as a mark of its sense of his merits, the degree of doctor in divinity. In 1768, Dr Wilkie published a series of sixteen "Moral Fables, in Verse," 8vo.; but these, though sufficiently ingenious productions, did not advance him much farther in public favour as a poet. After a lingering indisposition, he died at St Andrews, on the 10th Oct. 1772, in the fifty-first year of his age.

WILKINS, John, bishop of Chester, a learned prelate of the seventeenth century, was born in 1614, and, after receiving the rudiments of a classical education at a private seminary in Oxford, was matriculated at New-inn hall in 1627, which he afterwards left for Magdalen hall. Having taken holy orders, he obtained the appointment of domestic chaplain to the count palatine of the Rhine. On the breaking out of the civil wars, his opinions and discourses manifested his adherence to the popular party, and his conduct was rewarded by the headship of Wadham college, Oxford, for which celibacy was a qualification. In 1656, he married the sister of Oliver Cromwell; and the protector gave his brother-in-law a dispensation, which prevented his losing his preferment. In 1659, he received the headship of Trinity college, Cambridge; but, on the restoration of monarchy in the following year, he was ejected. But, in 1668, he was elevated to the episcopal bench, through the interest of Buckingham. As a mathematician and a philosopher, Wilkins exhibited considerable acuteness and ingenuity. His opinions of the practicability of a passage to the moon, which he conceived to be inhabited, are expressed in his work entitled the Discovery of a New World, or a Discourse on the World in the Moon (8vo., 1638). In 1640, he published a second treatise, the object of which is to prove that the earth is a new planet. His other writings are, Mercury, or the Secret and Swift Messenger (1641); Mathematical Magic (1648); Ecclesiastes, or the Gift of Preaching; On the Principles and Duties of Natural Religion; a Discourse concerning Providence; an Essay towards a Real Character and Philosophical Language (folio), &c. He was one of the literary personages who received a charter of incorporation from Charles II. under the name of the *royal society*. Bishop Wilkins died in 1672.

WILL. The will of man is the power which gives direction to his faculties. What we call the *rational will*, is the volition operated on by external influences, directing it to the attainment of supposed good, or the avoidance of supposed evil. This will even brutes have, as they are capable of seeking the agreeable and shunning the disagreeable; but of will in a higher sense, as influenced by the moral principle to seek what is good in itself, without reference to present pleasure or pain, brutes are not capable. Rational will presupposes liberty of choice. Moral liberty consists in the power of determining according to reason; but the will of man is never governed by a simple reference to the highest good: such purity of purpose can be ascribed only to the Deity. The freedom of the will is essential to moral action, and is the great distinction of man from the brute; yet it is not easy to reconcile it metaphysically with the influence of external things upon the mind, and with the foreknowledge of God. To determine how far the human will is free, and how far it is subjected to uncontrollable influences, has always been the great aim of the metaphysician and the moralist. But to give a proper view of a subject so profound, so unlimited, and so variously treated, would far exceed the limits which the character of this work prescribes.

WILL, OR TESTAMENT (*ultima voluntas*, last will). In the abstract, there is a contradiction in the idea of a will, because, whilst all the authority and obligation of a will is founded on the idea of a society, to which he who makes the will belongs, the person who claims the assistance of the society, has, in fact, ceased to belong to it, and all mutual obligations between him and the society have been dissolved by his death. It cannot be denied that there is something unphilosophical in the idea that a being, no longer a member of a society, shall nevertheless influence it by his previous will. But, on the other hand, the reasons in support of the right of making wills are so numerous, that it is sanctioned by the laws of all civilized nations, and even receives additional security with the progress of civilization. Our limits do not permit us to go into the discussion of these reasons. We will only remark that it is generally admitted that the disposition to acquire property, and the secure possession of it when acquired, are the foundation and safeguards of civilization; and this disposition to acquire, and the feeling of complete ownership, are greatly promoted by the liberty to dispose freely of acquired property, even after death.

The idea of a will does not exist among nations in their earliest stages. They admit the right of making testaments with reluctance, and under great restrictions, and render the execution of the right difficult, by surrounding it with formalities, which indicate that such a disposition takes place only with the consent of the society, and is valid only under its authority. In Rome, this right was extended, by the twelve tables, to every father of a family (*pater familias uti legassit super pecunia tutelave rei suæ, ita jus esto*); but the earliest form of making wills was to declare one's own will in the assemblies of the people (*calatis comitiis*), or in the presence of the soldiers, who were collected for a military expedition (*in procinctu*). Among the ancient Germans, the right of disposing by will was granted only to free persons sufficiently vigorous to appear "without support, without a staff," (*ungehabt und ungestabt*), and the right could be exercised only in the assembly of the people. Restrictions additional to those which proceed from a natural incapacity to perform a valid act, have always attended the right of making a will: thus, in France, foreigners were not allowed to bequeath their property (this restriction was preserved in the *droit d'aubaine* in France until the revolution): in Germany, none but free persons had this right, and even they could not dispose of inherited estates. Such limitations have been gradually abolished in modern times: still, however, in favour of children, parents, grand-parents, &c., many are yet continued in various parts of Europe; for instance, testators are not allowed to bequeath the whole of their property away from their natural heirs. Persons of full age, sound mind, reputable deportment, and capable of making known their intentions, are generally allowed to make a will. Of course, the testator cannot dispose of any thing of which he has not the full property, such as fiefs, entailed estates, &c.

In the Roman law, the doctrine of wills and testaments was intimately connected with the earliest foundations of their national law, with their religion by the *sacra privata*, with the ancient rights of their *gentes*, with their views of the complete property of a citizen (*dominium ex jure Quiritium*) and of mere possession (*quod in bonis est*), with their system of slavery, and their public law. Hence this doctrine is so interwoven with their whole law, and is marked by so many peculiarities; for instance, that a testament must always embrace the whole property left (*nemo pro parte testatus, pro parte intestatus decedere potest*), which has been abolished in the modern codes (Prussian Code i, xii, 256; Austrian Civil Code i, 556). The Roman law has, notwithstanding all these peculiarities, become general in modern Europe, and has found its way even to England (as testaments there come within the jurisdiction of the ecclesiastical courts), where it still exists with some modifications. In Germany, too, the Roman law is yet the law of the land, wherever it has not been expressly changed, and there it has retained the most of its peculiarities. In Germany, however, all foreigners are capable of bequeathing and inheriting, by a law made as early as the time of the emperor Frederic II. (See *Aubaine, Droit d'*.) This is not the place to treat a subject so extensive in all its details. We can only give the most important features. The form of testaments required by the Roman law still bears the stamp of its origin. The fundamental idea is that of a solemn and public transfer of the whole property, by which another person enters into all the transferable rights and obligations of the testator. This was to be done before seven witnesses, expressly summoned (Roman male citizens, against whom there was no legal objection), and the whole ceremony was to be performed without interruption. Five of these were proper witnesses: the sixth (*libripens*) originally carried a balance, to denote the weighing out of the estate to the heir, who was considered as a purchaser; the seventh (*antestatus*) is considered by Hugo as the foreman of the witnesses. In their presence the testator made known his will, either merely orally (*testamentum nuncupativum*), or by showing them a writing in his own hand, or at least signed by himself, declaring it to be his testament, which was then also to be signed and sealed by all the witnesses (*testamentum scriptum*). If the testator was a blind person, an eighth witness was necessary, and also if he could not write, but only in case he made a written instrument. The want of these external formalities made a will void (*injustum*), so that it lost its whole effect. The internal formalities included, in general, the institution of heirs, particularly if the testator had children or grand-children, or, in failure of them, relations in the ascending line, in which case it was necessary for him to make them his heirs, or to disinherit them explicitly. The entire omission to name such relations in the will, made it void (*testamentum nullum*), and the subsequent birth of a legal heir was equivalent to a revocation of the will (*testamentum raptum*). A testament passing over heirs entitled by law to a share (and such heirs included, besides children and parents, also sisters and brothers) was called inofficious (*inofficiosum*), and their legal portion might be claimed by such heirs. When the testator lost the right of bequeathing, the testament became invalid (*irritum*), as well as when the appointed heir ceased to be such, for some reason, and no one was substituted in his place (*testamentum destitutum*). Even in earlier times, the external formalities were dispensed with in particular kinds of wills (*testamenta privilegiata*), particularly, 1. the testaments of soldiers, which were almost entirely relieved from them, as well as from the internal formalities; 2. testaments made in the country, which required but five witnesses; 3. testaments made in times of contagious and epidemic diseases, or during a dangerous sickness, in which case the interruption of the ceremony did not make the will invalid; 4. testaments of travellers: also when parents left their property to their children only, no other formality was necessary than that they should write the will themselves, and mention the names of the children, and the date of the instrument: these were private testaments. In the times of the emperors, in whom the whole authority of the state was concentrated, a testament required no external formality but that of being delivered in person to the monarch; in fact, it was sufficient to deliver it to the officers of justice, and have it entered in the public records.

Modern legislation has changed much in these forms, though, generally speaking, they are yet required in most countries of Germany. In the middle ages, the ecclesiastical courts, almost every where, claimed the oversight of testaments, as, even now, testaments in England fall within the jurisdiction of these courts, because it was maintained that the future state of the soul of the testator was connected with the character of the testament, which therefore fell within the province of the church, and that every one was bound to make some bequest for pious purposes, for the salvation of his soul. The formalities connected with the making of testaments were lessened, and it was declared to be sufficient that they should be put in writing in presence of the parish priest and two witnesses; and legacies for the benefit of the church were relieved from all formalities. This rule of making a testament in the presence of the clergyman, is no longer the common law of Germany; but it has been retained as the local law of many places. The Roman regulations respecting judicial testaments have also been modified in Germany. In Saxony, a testament is judicial if it is drawn up in court by the judge and the clerk, or out of court by the judge, the clerk and an assessor (*Schöppe*), or is handed to them. The presence of the judge may be supplied by that of a second assessor. In other parts of Germany, a testament may be drawn up by a member of the town council and its clerk. But private testaments made according to the Roman form are also valid. In Prussia, judicial testaments are the only ones allowed. The testator either appears in court, and there deposits his will in writing, and, if he so pleases, sealed; or he declares his will orally, and it is taken down in writing; or he invites a deputation of the court to his house. In Austria, both judicial and extra-judicial testaments are valid. At the making of the former, at least two persons belonging to the court, and acting under oath, must be present; and, if the testator gives in his testament in writing, it must be signed by himself. A last will is also valid, *a*. if it is written entirely by the testator's own hand, and signed with his name; *b*. if it is written by another person, but signed by the testator, and acknowledged before three witnesses; or, *c*. if it is read before three witnesses; or, *d*. only orally declared. These last forms will probably be changed at some future period, as affording too much facility for forgery. In France, there are but two forms of testaments, the written testament, when the testator writes the will entirely himself, signs it, and affixes the date to it (*testament holographe*), and the public testament, when the testator declares his will orally, and signs the protocol before two notaries and two witnesses, or one notary and four witnesses. If the testator cannot write, this circumstance must be mentioned. the testator may also deposit with the notary a sealed instrument (*testament mystique*). In this case, six witnesses must be present at the declaration that the paper contains the will of the depositor. So great a variety of forms existing in various countries, it may become of great importance to know by what laws the validity of a will is to be judged. In general, the laws of the testator's native country must be followed; so that a Prussian or a Frenchman can make a testament in foreign countries only in the way prescribed by the laws of his own country. But in respect to the form of public acknowledgment, the laws of the country must decide; for example, a Frenchman in foreign countries may resort to the courts instead of notaries; and, if a Prussian should make a will in France, he must apply to the notaries to give validity to the instrument. The testament, according to the Roman law, is always revocable; and no person can legally divest himself of this privilege of change. The Romans did not admit of a man's binding himself to leave his property to a particular person. In Germany, however, an irrevocable right of inheritance can be obtained by contract, and the obligation is often made mutual, as in matrimonial contracts. Except in such cases, the testator can always change his testament, by taking back the instrument deposited in court, cancelling a private testament, or making another. But on this point, also, laws differ. According to the common law of Germany, the taking back of the deposited will is not a revocation of it, unless the intention of the testator is clearly manifested; for example, by tearing off the seals. The same is the case in Saxony. But in Prussia the taking back of a testament deposited in court, makes it void. A later testament has preference over an earlier one; but, if there are several testaments, and it cannot be ascertained which is the latest, both are valid; and, if the later testament was invalid from the beginning, the earlier one remains in force. No regularly-made testament can be annulled by a mere oral declaration; but the Roman law provides, that if a testament is ten years old (in which case it became void by the earlier law), it may be revoked by a declaration before three witnesses. Modern laws require for such oral annulment, unaccompanied by the act of erasure, tearing off seals, &c., the same formalities which were required to give validity to the instrument. In France, a will may be revoked by a written expression of the testator's purpose, and also by an oral declaration before one notary and two witnesses. Different from the testament in which the institution of an heir is required, is the codicil, which may contain only legacies; hence it is customary to add to testaments the clause, that if, from any circumstance, they cannot take effect as testaments, they shall, nevertheless, be considered as codicils (*clausula codicillaria*).

We shall now consider the laws of England on the subject of wills. In respect to personal property, a will is also called a *testament;* and the disposition of the testator's real or personal estate, or both, is called a *last will and testament*. A *devise* is the disposition of real property in a will, and a legacy is the personal property disposed of to one or more persons by a testamentary provision. A bequest is a provision of a will disposing of real or personal estate. Among the Anglo-Saxons, the practice of devising lands prevailed to some extent (Spelman *On Feuds*, c. v.; Wright's *Tenures*, p. 171); but, after the conquest, lands held by feudal tenure were not devisable, with the exception of burgage tenures. Lands held in gavel-kind, however, as it were, for the most part, those of the county of Kent, were devisable. After some changes in the laws, in this respect, in England, a statute was passed, in the beginning of the reign of Charles II., which gave a general power of devising whatever interest or estate the testator had in lands.

By the law of Scotland the transmission of land is regulated entirely on feudal principles. Landed property is conveyed to an heir in the form of a disposition or gift, not a bequeathment; and the law requires that the words "I give, grant, and dispose," be used, instead of the words "I will, and bequeath." We are sorry we have not room here to explain the reason of this nice distinction. The Scottish law, also, from its jealousy of the weakness of mankind, while under sickness, and of the importunity of friends in that conjuncture, has declared, that all deeds affecting heritage, if they be granted by a person on deathbed, to the damage of the heir, are ineffectual. When a person has been in bad health at the time of executing a settlement, by going to kirk or market unsupported, or by surviving the execution of the deed for sixty days, the objection of death-bed can be taken off.

Persons capable of making a Will. The capacity to make a will, as to make a contract, or do any other act that may affect the person or rights of a party, is subject to legal regulation. To make a valid will the testator must be of sound mind; and to make a devise of lands, he must be of the age of twenty-one years; but by the English law, a boy of fourteen, and a girl of twelve, may bequeath chattels. In England, a married woman cannot dispose of either real or personal estates by will. Devises to corporations, except for charitable uses, are not authorized by the English law. Though in England a person may dispose by will of his property, both real and personal, yet, in respect to real estate, the general doctrine has been, that a devise will operate only on the property of which the testator was possessed, at the time of making the will, and of which he continued in possession till his death. This construction often defeats the intention of the testator, who, by devising all his real estate, generally intends to devise what he may own at the time of his decease. And the provision is often, confessedly, a disposition of all the lands of which he may be in possession, at the time of his decease.

Execution of a Will. It is a general rule that wills, to operate on lands, must be executed according to the laws of the place where the lands lie; but personal property passes by a will executed according to the laws of the place of residence of the testator, though the property be situated elsewhere. This distinction arises from the general rule, that the title to lands is to be governed by the laws of the country where it is situated, but that personal property is subject to the contracts and disposition made by the owner, in conformity to the laws of the place where they are made. It is a general rule, with some few exceptions, that a will must be in writing. In England it is only requisite that it should be signed. The construction put upon this rule in England has been that the testator's writing his name in the beginning of the will is a signing. Three witnesses are required in England, and these do not require to sign in each other's presence.

Revocation. A will may be revoked by an instrument of equal formality, or by cancelling. A subsequent will, accordingly, is a revocation of a prior one, if its provisions imply a substitution of the latter will for the former. But the more general rule is, that if a subsequent will is invalid, it will not be a revocation of a preceding one; and the general rule again is, that by a revocation or cancelling of a subsequent will, a preceding one is revived. A will may be revoked by legal operation or inference; as in England, by subsequent marriage, and birth of a child, unless the wife and child or children be provided for by a marriage settlement. So the will of an unmarried woman is revoked by her marriage. A *codicil* is a supplementary will, and requires to be made with similar formality.

Construction. It is a general rule, that wills are to be construed liberally, and, as far as is practicable, so as to fulfil the intention of the testator. In this respect, a greater liberality is adopted than in regard to deeds and most other written instruments. Thus the law does not require that a devise should be to the devisee *and his heirs*, in order to carry a fee; any other words, or any provisions of the will, showing an intention to give all the testator's title, being sufficient for that purpose. But it has been held that, in general, the devise of a piece of land gives the devisee only a life estate, unless it could be gathered from the will that a greater estate was intended to be devised. The rule that the presumption shall be in favour of a life estate, if no other be expressed, has defeated the intention of testators in thousands of instances, indeed, in almost all cases of wills not drawn up by lawyers.

WILLAMOV, John Theophilus, a German dithyrambic poet, was born in 1736, at Mohrungen, in Prussia, and, in 1767, became a school-master in St Petersburg. He died in 1777. His poems relate to the separation of Sicily from Italy, the history of Arminius, and other elevated subjects. He also wrote fables in dialogue. The most complete edition of his poems was published at Vienna (1793).

WILLDENOW, Charles Louis, a celebrated botanist, born at Berlin, in 1765, was the son of an apothecary, and, after studying pharmacy under his father, was sent to the university of Halle, and then to Langensalza, where Wiegleb had a laboratory of pharmaceutical chemistry. Willdenow then returned to Berlin, where, in 1798, he received the chair of natural history at the royal college of medicine and surgery. In 1801, he was appointed professor of botany to the academy of Berlin, and, at length, director of the botanic garden at Berlin, which received great additions and improvements under his management. He formed a zoological cabinet, which he presented to the museum of Berlin. In 1804, he travelled through Austria and Upper Italy, and, seven years after, was invited to Paris by Humboldt, to classify and describe the multitude of new plants brought by that traveller from America. Willdenow died not long after his return to Berlin, July 10, 1812. He was an associate of twenty-four learned societies; and the king bestowed on him the order of the black eagle. Among his principal works are, *Prodromus Floræ Berolinensis* (1787); *Historia Amaranthorum* (Zürich, 1790, folio); *Elémens de Botanique* (1792), which has been translated into several languages; *Arboriculture Berlinoise spontanée* (1796); *Species Plantarum exhibentes Plantas ritè cognitas ad Genera relatas cum Differentiis specificis, Nominibus trivialibus, synonymis, selectis Locis natalibus, secundum Systema sexuale digestas* (Berlin, 1797—1810, 5 vols., in nine parts); *Guide pour étudier soi-même la Botanique* (1804); and *Hortus Berolinensis*, of which only the first volume has been published. Willdenow's great work, the *Species Plantarum*, was left incomplete, as he did not live to finish the history of the cryptogamic plants. A continuation has been promised by professor Link, of Berlin.

WILLE, John George, a distinguished engraver, was born in 1715, near Giessen, in Hesse-Darmstadt. He learned the trade of a gunsmith, and afterwards became a watch-maker. He subsequently went to Paris, and there became an engraver. His portrait of marshal Belleisle became the foundation of his fortune. In the revolution, he lost his property, amounting to 800,000 francs, and would have lost his life had not his son happened to be general of the national guard of Paris. Napoleon made him a member of the legion of honour, and the institute elected him into their body. His portraits of the minister Florentin and of Bossuet are particularly valued. He subsequently engraved historical and similar pictures; also many sketches of his son *Peter Alexander Wille*, born in Paris, in 1748. He died in 1808.

WILLIAM I., surnamed the *Conqueror*; king of England and duke of Normandy. He was born in 1024, and was the natural son of Robert, duke of Normandy, by Arlotta, the daughter of a tanner of Falaise. His father, having no legitimate son, on his departure on a pilgrimage to Jerusalem, caused the states of the duchy to swear allegiance to him as his heir. Robert died in 1035, on his return from Palestine; and the guardian of the young duke could not prevent the king of France from reducing the duchy to a very low condition. When William assumed the reins himself, his vigour and ability soon repelled these aggressions, and reduced both the French king and his own rebellious barons to the necessity of peace and submission. Edward the Confessor, at this time king of England, being closely connected with the Norman family, was instigated by the archbishop of Canterbury, a Norman, to allow William to be given to understand that the king designed him for his successor. The irresolute character of Edward, however, induced him to keep the secret in his own breast, which enabled Harold to ascend the throne on his death, in 1066, without opposition. Harold had previously been carried a captive into Normandy, where he was treated with great distinction by William, who informed him of the intentions of the Confessor, and took from him an oath to do his utmost to carry them into effect. His occupation of the throne led to immediate war, and the Norman invasion followed, which was rendered successful by the battle of Hastings, fought on the fourth of October, 1066, terminating in the defeat and death of Harold and two of his brothers. On the Christmas-day of the same year, William was crowned, after a sort of tumultuary election on the part of the English nobles, and took the customary coronation oath. His first measures were mild: he sought to ingratiate himself with his new subjects, preserved his army in strict discipline, confirmed the liberties of London and other cities, and administered justice impartially. On his return to Normandy, however, the English, being treated by the Norman leaders like a conquered people, broke out into revolt, and a conspiracy was planned for the massacre of all the Normans in the country. On this intelligence, William returned, and began with a show of justice, by repressing the encroachment of his followers; but, reviving the tax of Danegelt, which had been abolished by Edward the Confessor, the discontents were renewed. These he repressed with his usual vigour, and a temporary calm succeeded. The resistance of two powerful Saxon nobles, Edwin and Morcar, who had formed an alliance with the kings of Scotland and Denmark, and with the prince of North Wales, soon after drew William to the north, where he obliged Malcolm, king of Scotland, to do homage for Cumberland. From this time he treated the English like a conquered people, multiplied confiscations in every quarter, and forced the native nobility to desert the country in great numbers. In 1069, another formidable insurrection broke out in the north, and, at the same time, the English resumed arms in the eastern and southern counties. William first opposed the storm in the north, and executed such merciless vengeance in his progress, that the whole country between York and Durham was turned into a desert; and above 100,000 of both sexes, and all ages, are said to have perished. There being now scarcely a landed proprietor who had not incurred the forfeiture of rebellion, he put into execution his plan of introducing a total alteration of the state of English law and property, by dividing all the lands into baronies, and adopting the feudal constitution of Normandy in regard to tenure and services. He also reduced the ecclesiastical property to a similar system, and, in order to prevent resistance from the clergy, expelled all the English church dignitaries, and placed Normans or other foreigners in their stead. Still further to subjugate the minds of the English, he sought to abolish even their language, causing the French to be spoken at court, and used in courts of justice and in law proceedings, and ordering it to form a leading part of instruction in all the schools throughout the realm. In 1071, the earls Edwin and Morcar produced a new insurrection in the north, which terminated in the death of the former and capture of the latter; and the Scottish king having again aided them, William marched an army into Scotland, which soon led to a peace; on which occasion, he allowed the return of the weak but rightful Saxon heir, Edgar Etheling, who had taken refuge in Scotland, and promised him an honourable establishment. In 1073, he returned to Normandy, whence he was troubled by a revolt among his Norman barons, which was, however, quelled by the regent Odo, his half brother. In 1076, he received a letter from pope Gregory VII., requiring him to do homage for his kingdom, and to pay the accustomed tribute from England to the holy see. William denied the homage: nor would he allow the English prelates to attend a general council summoned by Gregory, but consented to the levy of Peter's pence. About the year 1081, he instituted that general survey of the landed property of the kingdom, the record of which still exists under the title of *Domesday Book*, being a minute return of the estates in the different counties, their extent, proprietors, tenure, condition, and value. The manner in which he laid waste the New Forest in Hampshire, where he demolished villages, churches, and convents, and expelled the inhabitants for thirty miles round, merely to form a forest for hunting, exhibits his cruelty and love of sporting, which he further protected by a most severe code of game laws. In 1087, he went to war with France, whose king had encouraged a rebellion of Norman nobles. He entered the French territory, and committed great ravages, but, by the starting of his horse, received an injury which hastened his death, at the abbey of St Gervais, near Rouen (1087), in the sixty-third year of his age. He left three sons—Robert, to whom he bequeathed Normandy; William, who inherited England; and Henry, who received but his mother's property. He also left five daughters. William the Conqueror was the most powerful sovereign of his time. He possessed superior talents, both political and martial, and employed them with remarkable vigour and industry. His passions were, however, strong; his ambition severe and merciless; and his love of sway often led him to disregard all restraints of justice and humanity.—See Thierry's *Histoire de la Conquête de l'Angleterre par les Normands* (Paris, 1825, 3 vols.)

WILLIAM II., surnamed *Rufus*, from his red hair, second son of the preceding, was born in 1060. Being nominated king of England by his father, on the death of the latter, he hastened over from Normandy, took possession of the royal treasury at Winchester, and was crowned at Westminster in September, 1087. The division of England and Normandy did not, however, please the great barons, who possessed territories in both; and a conspiracy was formed for effecting the deposition of William in favour of his brother Robert. As the conspirators were chiefly Normans, the king, who possessed a considerable share of his father's vigour and activity, immediately turned his attention to the English, and, by promising a restoration of their ancient laws, and liberty to hunt in the royal forest, he was enabled to levy a force, by means of which he successively reduced the castles of the confederates, whom he sent to Normandy, after confiscating all their English possessions. Being now firmly seated on his throne, he forgot his promises to the English; and the death of Lanfranc, archbishop of Canterbury, freeing him from an authority which he respected, he extended his rapacity to the church, and seized the temporalities of vacant bishoprics and abbeys, to which he delayed appointing successors. In 1090, he made an incursion into Normandy, to retaliate on his brother Robert; but a reconciliation was effected between them, and Robert accompanied him back to England, and led an army for him against the king of Scotland, whom he compelled to do homage to William. The two brothers did not, however, long continue friends, and, in 1095, William was in France plotting against Robert, when he was recalled to England by a conspiracy of his barons in the north, which he quickly repressed. The following year, Robert mortgaged his dukedom to William, for the sum of ten thousand marks, to enable him to fit out an expedition and join the crusaders in the Holy Land. William accordingly took possession of Normandy and Maine, and soon after, being seized with a dangerous illness, appointed Anselm, a Norman abbot, distinguished for learning and piety, to the archbishopric of Canterbury, which had remained vacant since the death of Lanfranc. Contrary to his expectation, he found in Anselm a strenuous defender of the claims of the church, and strove to depose him by means of a synod, but could not succeed. At length Anselm obtained permission to visit Rome; and in his absence the king immediately seized on all the temporalities of his see. He soon after was obliged to visit France, to resist the progress of the lord of La Fleche. In 1100, the duke of Guienne, following the example of the duke of Normandy, applied to William to advance him money on his province, to which the latter readily agreed, and was about to pay the money and acquire possession of the territories, when an accident terminated his life. He was hunting in the New Forest, and had alighted from his horse after a chase, when, a stag suddenly starting up near him, a French gentleman, named Walter Tyrrel, let fly an arrow at the animal, which, glancing from a tree, entered the king's breast, and pierced him to the heart. Tyrrel immediately galloped to the coast, and embarked for France, where he joined the crusaders. The king's body was found by the country people, and interred, without ceremony, at Winchester. This event took place August 2, 1100, when William was in the fortieth year of his age, and thirteenth of his reign. This prince possessed vigour, decision, and policy, but was violent, perfidious, and rapacious.

WILLIAM III., hereditary stadtholder of Holland and king of England, the greatest enemy of Louis XIV., and the founder of the system of the balance of power in Europe, became prince of Orange by the death of his father, William II. of Nassau. He was born in 1650. His mother was Henrietta Mary Stuart, daughter of the unfortunate Charles I. Possessing superior talents, and educated in an excellent manner by the celebrated De Witt, he gained the love of the people, who appointed him captain-general of the union in 1672, when Louis XIV. invaded the republic, and conferred on him the office of stadtholder, which had been discontinued four years before. He caused the dikes to be broken down, deceived the French generals by a skilful manœuvre, formed a junction with the imperial army, and forced the French to retreat. The party of the house of Orange now prevailed; and the states of Holland, together with four provinces, declared, Feb. 2, 1674, the stadtholdership hereditary in the house of Orange. William lost, indeed, the battle of Senef, in 1674, and that of St Omer, in 1677; but he was, nevertheless, able to keep the enemy in check, and, by his policy, engaged the empire, Spain and Brandenburg to take part with Holland, so that a peace was brought about at Nimeguen, in 1678. He could not, however, prevent the conclusion of separate treaties. William's whole policy was directed against Louis XIV. for whom he entertained a personal hatred. To curb the ambition of the French monarch, he instituted the league of Augsburg, July 29, 1686, between the emperor, Spain, Sweden and Holland, to which Denmark, and some German princes, also acceded. Perhaps he may have had the further object of giving effect to his plans with respect to England. His wife, Mary (married in 1677), was the daughter of James II., and presumptive heiress to the throne. Unexpectedly, James's second wife gave birth to a son, June 10, 1688. The greater part of the parliament and of the nation now feared that the bigoted James would introduce the Catholic religion, and subvert the constitution. Rumour also asserted that the prince was supposititious. The Episcopalians and Presbyterians in England, under these circumstances, united, in order, by the aid of Holland, to give Mary the succession to the throne. William foresaw that England, by the policy of his father-in-law, would become more and more closely connected with France: he therefore joined with the great majority of the British nation; and the pensionary Fagel persuaded the states-general to support him with ships and troops for the preservation of British freedom and the Protestant religion. William arrived suddenly at Torbay, Nov. 5, 1688, with a fleet of 500 sail, ostensibly equipped against France, and with 14,000 troops. Upon his landing, a great part of the nobility immediately declared for him; and James's soldiers, by degrees, went over to him; so, too, did Churchill, afterwards Marlborough, who was followed even by the second daughter of James, Anne, with her husband prince George of Denmark. The overtures of the king were rejected: he therefore fled with his family to France, in December, after which William made his entry into London. The two houses of parliament, in convention, now declared that James II. had broken the fundamental compact between the king and the people, and had consequently forfeited the throne. After this (Feb. 13, 1689), Mary was proclaimed queen, and William, her husband, who had, meanwhile, gone over to the English church, was proclaimed king, and was alone to conduct the administration. At the same time, the declaration or bill of rights (see *Bill of Rights*) settled the limits of the royal power, and the order of succession. This is called the revolution of 1688. Scotland followed England's example; but in Ireland, whither Louis XIV. sent James with an army, the majority of the Catholics maintained the cause of the deposed king. But the victory gained by William over the army of James on the Boyne, July 1, 1690, and by his general Ginkel at Aghrim, July 13, 1691, assisted by the clemency with which he treated the vanquished party, made him master of Ireland. William was wounded in the former battle; but he caused the wound to be dressed at the head of his troops, and fought on horseback till the battle was won. In the war on the continent he was less successful. At Steinkirk he was defeated by marshal Luxembourg, in 1692, and at Neerwinden by the same general, in 1693; but he always succeeded in wresting from the French the fruits of their victories by skilful retreats and marches. He even took Namur, in 1693, in the sight of a superior hostile army. Louis was finally compelled to acknowledge him as king of England, at the peace of Ryswick, in 1697. The parliament insisted, at that time, on the disbanding of nearly the whole army, because it deemed a standing army incompatible with the security of the constitution. Soon after, the will of Charles II. of Spain, who had made the grandson of Louis XIV. his heir, induced William to arm all Europe against Louis in the great alliance of the Hague, Sept. 7, 1701. For the benefit of Austria, and to preserve the balance of power, but more especially because he could not brook that Belgium should be dependent on the policy of France, he wished the Spanish monarchy to be divided, and for this purpose repaired to Holland, at the end of June, 1701. Though his lungs, at this time, were so weak that he could not speak loud, and he felt that his end was approaching, he made all preparations, with his usual sagacity, for the opening of the campaign. After the death of James II. Louis XIV. having caused his son, James III. to be proclaimed king of England, William found it easy to induce England to accede to an alliance with Holland, the emperor, Denmark and Sweden, and to consent to the equipment of 40,000 soldiers and 4000 sailors. But in the midst of these projects, he broke his collar-bone by a fall from his horse, between Kensington and Hampton court, March 8, 1702, and died, in consequence of the accident, March 16, aged fifty-two years. (His wife, Mary, had already died childless, in 1695.) With him the hereditary stadtholdership of the five provinces became extinct, and the Orange possessions were divided between Prussia and William's nearest cousin and testamentary heir, John Will. Friso, the prince of Nassau-Dietz, hereditary stadtholder of Friesland and stadtholder of Gröningen, from whom the present king of Holland is descended. William's manners were too cold and ungracious to allow him to be popular with the British. Under a reserved exterior he concealed a strong love of renown and power. His chagrin, when he was compelled to disband his Dutch guards, and the regiments of French fugitives in his pay, was so great, that he was on the point of resigning the government, and was prevented with difficulty by his friends and ministers. The British continental policy, a consequence of jealousy towards France, was founded by William; but he founded, at the same time, the subsidy, or loan system, and the national debt. To obtain the majority of votes in parliament, he made use of bribery. Otherwise he reigned in the spirit of freedom and tolerant Protestantism, and agreeably to the true interest of the nation, which had been wholly disregarded by the Stuarts. The whigs were, therefore, now the ministerial party, and the house of commons from this time acquired new political importance. In the Netherlands, William founded a school of great statesmen, like Fagel and Heinsius. Immersed in politics and war, he had neither leisure nor inclination for literature and art. In conversation, he was grave and repulsive; but in business, penetrating, quick and decided; in danger, undaunted; in difficulties, unshaken; in war, bold without ostentation. Though of a weak constitution, he feared no hardships. Much as he loved fame, he hated flattery and pomp. See *James II.*, *Marlborough*, and *Britain*.

WILLIAM IV., king of the united kingdom of Great Britain and Ireland, was the third son of George III., and born August 21, 1765. He ascended the throne on the death of his brother, George IV., June 26, 1830. Previous to his elevation to the royal dignity, he was known by the title of the duke of Clarence. Being appointed lord high admiral, during the short administration of Canning, who, deserted by a large part of the tory party, had been obliged to cast about for support in every quarter, the duke of Clarence was censured for expenditures made without waiting for parliamentary appropriations, and had found it advisable to resign his office during the Wellington administration (1828.) On his accession to the throne, he retained the ministers who were in office at the decease of his predecessor (the Wellington cabinet), with assurances of his confidence in their zeal and ability. Opposition, disappointed in their expectations of a change of ministry, founded on the whig family connexions formed by several of the Fitzclarences (natural children of the duke of Clarence by Mrs Jordan), and partly on the character and previous political course of the king, now renewed their attacks on the ministry with additional vigour. In the new parliament, which met in November, the ministry being left in a minority on a motion of Sir H. Parnell for referring the civil list to a select committee (15), immediately sent in their resignation; and a whig administration was formed on the twenty-second, with earl Grey at its head. The great event which will render the reign of William IV. memorable, is the passage of the reform act. William IV. died on the 20th June, 1837, and was succeeded by his niece, Victoria. He was affable in his manners, cordial in his deportment, with somewhat of the rude heartiness of the deck, on which he had passed some of his early years. In the navy he had, of course, been under the command of plebeians, and the messmate and companion of simple commoners. This had given him more knowledge of the common classes than his brother and predecessor had had an opportunity of acquiring, and, although he had never distinguished himself in the navy, something of popular manners, and a command of sea-phrases. William IV. married in July, 1818, Adelaide, sister of the duke of Saxe-Meiningen, by whom he had no surviving children. He had, however, a large family by Mrs Jordan, the celebrated actress, who was for many years his mistress, while duke of Clarence. This lady he seems to have unaccountably abandoned at the last, for she died in obscurity, in France, in 1816. As a miserable set-off to his conduct in this matter, on his accession, he ordered Chantrey to prepare a statue, to be placed over her remains, in the cemetery of St Cloud. The eldest son of the king, by Mrs Jordan, George Fitzclarence, was created earl of Munster in 1831; a second, lord Adolphus Fitzclarence, is captain in the royal navy; a third, lord Frederic Fitzclarence, colonel in the army; and a fourth, queen's chaplain. The earl of Munster is author of an Account of the British Campaign of 1809, in Spain and Portugal (London, 1831, 2d vol., of Memoirs of the Late War). The five daughters of Mrs Jordan are married to the earl of Errol, the honourable J. E. Kennedy (son of earl Cassilis), Mr Sidney, colonel Fox (son of lord Holland), and lord Falkland.

WILLIAM I. THE YOUNGER, count of Nassau, prince of Orange, the founder of Dutch freedom, was the eldest son of William the Elder, count of Nassau, and Juliana, countess of Stolberg, and was born April 16, 1533, at the castle of Dillenburg, in the county of Nassau. He was educated in the Roman Catholic faith, by Maria, queen of Hungary, sister of Charles V. and spent nine years in attendance on the person of the emperor, who had so high an esteem for the spirit, the prudence and intelligence of the prince, that he asked his opinion respecting the most important matters, and, when he was but twenty-two years old, intrusted him with the chief command of the army in the Netherlands, in the absence of Philibert, duke of Savoy. He also recommended him to his successor, Philip II., who, however, deceived by the calumnies of the Spaniards, regarded him as the cause of the resistance of the Netherlands, and, therefore, would not confer on him the office of stadtholder. As cardinal Granvella had now the entire confidence of the king, and Margaret of Parma, who was charged with the government of the Netherlands, was obliged to do whatever this proud and ambitious prelate suggested, especially with respect to the introduction of the detested Spanish inquisition, and the erection of new bishoprics, the count of Egmont, the prince of Orange, and the count of Horn, therefore, represented to the king, in writing, that unless the cardinal was speedily recalled, his violence would drive the country to rebellion. Philip looked on this step as treason; but he concealed his anger, and recalled the cardinal, but, on the other hand, sent the duke of Alva, with Spanish and Italian soldiers, to the Netherlands. After the remonstrance, offered, in 1566, by three hundred noblemen, with count Louis of Nassau, the brother of William, at their head, against the introduction of the inquisition and the establishment of new bishoprics, had been rejected with contempt (the petitioners were styled beggars—*Gueux*), William had a meeting with Egmont, Horn, his brother Louis, and others, at Dendermond, to deliberate on the means of averting the threatening danger. The majority advised an armed resistance. Count Egmont alone, governor of Flanders and Artois, was of opinion that they should trust to the grace and clemency of the king. "This grace," replied the sagacious Orange, "will be our destruction, and Egmont the bridge by which the Spaniards will pass into the Netherlands, and which they will then destroy." When they separated, Egmont and Orange, in presentiment of the future, embraced, and took leave of each other with tears. The prince, with his wife and his children, excepting the eldest, who was studying at Louvain, repaired to Breda, whence, however, he returned to his castle at Dillenburg. Meanwhile, Alva advanced into the Netherlands. Many men of consequence, including Egmont and Horn, were immediately arrested, and executed at Brussels, June 5, 1568. When cardinal Granvella was apprized of this at Rome, he inquired whether Alva had taken Secrecy (so he termed the prince of Orange.) "If this fish is not caught, the duke's fishing is good for nothing." Alva caused the prince, the counts of Hoogstraten, of Kuilenburg, and others, who had retired from the country, to be summoned before the council of twelve. The prince did not appear, but sent in an appeal to the states of Brabant, as his natural judges, and to the king in person, because, as a knight of the Golden Fleece, he could be judged only by the king in person, and by the knights of the order. He applied for protection to the emperor Maximilian II. and the German princes. The emperor promised it to him, and condemned the proceedings of Alva, who had declared the prince outlawed for not appearing in person on the appointed day, had confiscated his property, stationed troops in his city of Breda, and removed his son Philip William, then thirteen years of age, from the university of Louvain, and sent him as a hostage to Spain.* The prince of Orange now took the field against Alva. He publicly professed the Protestant religion, and received aid in money and troops from several Protestant princes. With the army, which he had raised, his brothers Louis and Adolphus invaded Friesland. At first, they defeated, at Heiligerlee, in Gröningen, the Spanish general, John of Ligne, count of Aremberg, who fell in the engagement; but Adolphus also lost his life; and, as count Louis wanted money to pay his troops, he was soon after beaten by Alva at Jemmingen, July 21, 1568. William now raised a new army of 24,000 Germans, who were joined by 4000 French soldiers, and declared publicly that Alva and his council of blood (*conseil des troubles*), in Brussels, were the cause of the war. He conducted his forces, with great skill, across the Rhine and Meuse, entered Brabant, and defeated a division of the hostile army, but was unable to bring the duke of Alva, who threw himself into the fortresses, to an engagement, or to excite the people, who trembled before the Spaniards, to a general insurrection: on the contrary, he was obliged to sell his plate and baggage, and even pledge his principality of Orange to pay his arrears to his officers and soldiers. His army now dispersed. He himself, with 1200 cavalry, and his brothers, repaired to the duke of Deux Ponts, and took part in his expedition to France, against the Catholic party of the Guises. In this expedition, he distinguished himself in several battles and sieges, but, after the unhappy termination of the campaign, returned to Germany. In France, admiral Coligny had advised him to fit out privateers against the Spanish, and establish himself particularly in Zealand and Holland, from which the Spaniards would hardly be able to drive him. The prince followed this advice, and the privateers made themselves masters, in 1572, of the town and harbour of Briel, on the island of Voorn, and also took Flushing. As Alva's tyranny became more intolerable, and the people were exasperated by new exactions, several cities of Holland, Zealand, Overyssel and Gueldres publicly declared for the prince of Orange. To relieve his brother Louis, besieged by Alva at Bergen, in Hainault, he entered Brabant with 17,000 men, where Mechlin and Louvaid threw open their gates to him; but the French auxiliaries, sent him by Coligny, were defeated, and he himself could not compel Alva, who had stationed his forces in an entrenched camp, to an engagement. He therefore retired, not without loss, to the Rhine, and narrowly escaped the danger of being captured by 1000 Spaniards, who broke by night into his camp. A little dog waked him in time to assemble his soldiers, and cut off the retreat of the enemy. He next proceeded to Utrecht and Zealand, where the Dutch privateers had appointed him their admiral. In 1575, the states of Holland conferred on him the sovereignty and chief command, for the time that the war with Spain should last; and the example was followed by Zealand, and afterwards by Utrecht, Gueldres and Overyssel. This trust was renewed in 1581. Some days before they openly announced their defection from Spain, the states did homage to the prince as their sovereign, and took the oath of allegiance. This sovereignty, however, was merely personal; but, in 1582, the grant of the hereditary dignity of the old counts of Holland, to which was annexed the possession of their domains, was made him by the states, and formally accepted. The prince was deserving of this confidence. He had already, in 1573, equipped a fleet of 150 sail at Flushing. This fleet was always superior to the Spanish, so that it may be truly said, that the Dutch achieved their freedom on the ocean. After Alva and the prince had each taken several cities, Louis of Zuniga and Requesens succeeded the duke in 1573, and, April 14, 1574, defeated Louis and Henry of Nassau, the brothers of the prince, who both fell on the field of battle. William raised the siege of Leyden by breaking down the dikes. Zuniga soon after died; but the Spanish soldiers at Antwerp and other places committed such outrages, that all the provinces of the Low Countries, excepting Luxemburg, united at Ghent, in 1576, to expel the foreign troops, and relieve themselves from religious restraints; and when the new stadtholder, John of Austria, a natural brother of the king, violated the privileges granted them by the edict of 1577, the states of Antwerp called the prince of Orange to their aid. The people received him with acclamations in Brussels, where a part of the estates offered him the stadtholdership. But as several nobles were opposed to him, he effected the adoption of a resolution that Matthew of Austria should be received as stadtholder, while he himself should have the rank of lieutenant-general; but he retained the management of all public business. Meanwhile, by the victory at Gemblours, January 31, 1578, the Spaniards recovered their superiority in the Walloon provinces, which were zealously Catholic. The new stadtholder, Alexander Farnese of Parma, appointed by the king after the sudden death of John, was a politic general, who knew how to win the favour of the Belgians, dissatisfied with the religious peace, or the political equality of the two churches, and converted to the Spanish interest the nobles, who were disaffected towards the prince of Orange. The prince, therefore, brought the seven northern provinces into closer connexion, by the union of Utrecht, January 23, 1579, and thus laid the foundation of the republic of the United Netherlands. The negotiations for peace at Cologne having been fruitless, the states, at the proposal of the prince, conferred the sovereignty, in 1580, on Francis, duke of Anjou, brother of King Henry III. of France, and on July 26, 1581, renounced their allegiance to king Philip of Spain, as a tyrant. The king had already declared the prince of Orange outlawed, as a "heretic and false Christian, another Cain and Judas, a committer of sacrilege, a perjurer, an instigator of the disturbances in the Netherlands, and a real pest of human society," and had set a price of 250,000 dollars on his head. Whoever should deliver him, living or dead, into the hands of the Spaniards, was to receive a pardon for all crimes, and, with his posterity, be raised to the rank of nobility. The estates, in consequence, gave their stadtholder a body-guard, and the prince replied in a violent manifesto, in which he accused the king of lust and murder, of the death of his son don Carlos, and of his wife Elizabeth. Meanwhile, the duke of Parma took several fortified places, but was obliged to raise the siege of Cambray, when the duke of Anjou advanced with an army. The French prince was hereupon proclaimed duke of Brabant, March, 1682, on which occasion the prince of Orange presented him the ducal coronet, and publicly administered the oath, that he would reign agreeably to the tenor of the compact. This event took place in Antwerp, where an attempt was soon after made to assassinate the prince. A Spaniard, named Jaureguy, shot him with a pistol: the ball entered under the right ear.

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* He was eventually released, and died in 1618.

and passed out through his left cheek, destroying several of his teeth. The perpetrator was cut down on the spot by the guard. A Spaniard, Salseda, and an Italian, Francis Baza, were likewise apprehended, who had received money from the duke of Parma to make way with the duke of Anjou and the prince of Orange. Both were convicted: one was torn to pieces by four horses, at Paris; the other put an end to his own life. After these occurrences, the duke of Anjou began to aim at unlimited power, heedless of the advice of the prince of Orange. But his design of making himself master by force of the most important cities, such as Bruges and Antwerp, was frustrated by the citizens; and he returned to France, January 3, 1583, where he died the same year. July 10, 1584, the prince of Orange was shot in his palace, at Delft, by a young Burgundian, named Balthasar Gerard, who had insinuated himself into his confidence. He was rising from table, when the assassin fired a pistol at him, containing three balls. He fell, and died with the words, "*Mon Dieu! Mon Dieu! Ayez pitié de moi et de ton pauvre peuple!*" His murderer was not more than twenty-two years old. On his examination, he confessed that a Franciscan of Tournai, and a Jesuit of Treves, had persuaded him to commit the deed by the assurance that it would secure his eternal happiness. William was fifty-two years old, was well formed, had chestnut hair, and a brownish complexion. He spoke little; but what he said was judicious and pleasing. In the art of winning the good-will of men, he was a master. Towards his people, his demeanour was friendly and discreet. He frequently went in the streets with his hat off, and conversed freely with the citizens. In his house, he was hospitable, a lover of splendour, and liberal of every thing but his confidence. His acute understanding penetrated the character of men and events: but he himself was impenetrable. Reserved in his manners, and apparently even timid, when he spoke, the fire and boldness of his eloquence carried along the minds of all. Danger he met with calm equanimity, obstacles with a wise firmness. He was not anxious for his own exaltation, but for the interest of the people: the freedom, therefore, which he established did not perish with him, and his name has acquired a permanent place in the history of Europe. He was four times married. His son Maurice, who succeeded him in the office of stadtholder, was one of the greatest captains of his age. His other son, Frederic Henry, succeeded Maurice, and died in 1647. William III., king of England, was grandson of Frederic. There are three lives of William, in Dutch, by anonymous authors. See, also, *Meursii Guglielmus Auriacus*, etc. (Amsterdam, 1638, fol.) and Kluit's *History of the Dutch Government*.

WILLIAM I., elector of Hesse, was born in Cassel, in 1743, during the reign of his grandfather. His father Frederic II. ascended the throne in 1760. Having become a Roman Catholic in 1754, the education of the children was left, according to agreement, entirely with his wife, who also received the government of the county of Hanau as the guardian of the children. Prince William studied at the university of Göttingen. During the seven years' war, he lived at the court of Christian VII., whose second sister he married in 1764. When of age, he took the government of the county of Hanau out of the hands of his mother. The young prince was active, economical, just, and popular. In 1776, he concluded, as did several other German princes, a treaty with England, to furnish troops to be employed against her colonies in North America, then at war with the mother country. Two years later, he was made a major general by Frederic the Great of Prussia, and took part in the war of the Bavarian succession. In 1785, he became sovereign of all the Hessian territories, after the death of his father. He now showed himself severe, active, and just; but his disposition for saving often degenerated into avarice, whilst his mania for soldiers became a curse to his country. He ruled independently, and closely watched the officers of his government, often protecting the peasants, whom he considered as his property, against them. He improved the schools and churches, the police, and the administration of justice. In 1787, he concluded another treaty with England, agreeing to furnish 12,000 men, in consideration of receiving for their service, 675,000 crown-dollars annually. He also marched troops against France when the revolution broke out. The peace of Basle, concluded August 28, 1795, between Prussia and France, put an end to his exertions in this war. By the peace of Luneville, William received the dignity of elector, and an indemnification for the territory that he had lost, taken chiefly from the possessions of the elector of Mayence. He took the greatest care of the increase of his private treasure. His known disposition towards France, his relations with Prussia, (he being a field-marshal in her service, and his eldest son having married, in 1797, the sister of Frederic William III. of Prussia), and his continual military preparations, drew upon him the misfortunes which befel him after the battles of Jena and Auerstädt. In consequence of the threats of Napoleon, and the advance of French troops under Mortier and the king of Holland, he fled to the neutral states of the king of Denmark, saving only his family and his treasures. By the peace of Tilsit and the foundation of his kingdom of Westphalia, William I. was deprived of all his dominions, and lived, from July, 1808, in Prague. In 1809, when Austria took arms against France, the exiled elector issued a proclamation to his former subjects, and began to collect an army near Eger, in Bohemia, with which he thought to recover his electorate; but the issue of the war put an end to his undertaking. The victory of the allied powers at Leipsic, in 1813, improved his condition. In November, 1813, he entered his former capital, the city of Cassel. Though seventy years old, he resumed the labours of government with great activity, but not to the benefit of his people. His ideas of monarchical power were entirely at variance with the spirit of the times. Every thing was to be put on the old footing: 20,000 men (with *queues*, like the soldiers of former times), soon marched to join the allies, but were allowed to return even before the peace of Paris, on condition that they should be kept ready for immediate service. The elector, however, did not comply with this condition, from motives of economy, and became thereby involved in difficulties with the allies, who marched troops into his country. By the mediation of Prussia, this difficulty was adjusted. In 1815, the elector sent 15,000 men to act against France; they fought at Sedan, Charleville, Mezières, &c. His wish to see the German empire restored by the congress of Vienna was as fruitless as his plan to have himself acknowledged king of the Catti, so that he retained his former title of elector; and, having received several additions to his territory, he called himself also grand duke of Fulda and prince of Isenburg. He would not acknowledge the validity of the sale of the crown domains, which had been made under Jerome, and took them away from the buyers. This fact, the crying injustice of which was admitted by Prussia and Austria, is mentioned in the article *Domain*. The assemblies of the estates, to which he had added the estate of peasants, gave him much trouble, as the ground assumed by them did not agree with his antiquated notions of the rights of the crown. Towards his officers he was avaricious and severe. His soldiers received little pay and much drilling and flogging. He refused to separate the public treasury from his enormous private accumulations. His conduct towards individuals who had been in office under the Westphalian government was unprincipled. On the other hand, he must be admitted to have been careful to prevent his officers from abusing their authority. He was accessible to his subjects, and protected justice when it did not clash with his interests, or unless he had formed wrong notions of what was right. He died in 1820, and was succeeded by his only son, the elector William II

WILLIAM I. (**WILLIAM FREDERICK OF ORANGE**), king of the Netherlands and grand duke of Luxemburg, was born Aug. 24, 1772. His father, William V., prince of Orange and Nassau, hereditary stadtholder, who died in 1806, at Brunswick, was descended from John, the youngest brother of the great William I. of Orange; his mother was a princess of Prussia. In 1788, he made a tour in Germany, and remained for some time in Berlin, at the court of his uncle, king Frederick William II. In 1790, he entered the university of Leyden. In 1791, he married the Prussian princess Frederica Louisa Wilhelmina, sister of the present king of Prussia. He then undertook many improvements in the army, but suffered much opposition from the patriots, who had been put down, in 1787, by Prussian troops. Part of them had fled to France; and the national convention declared war against the stadtholder, Feb. 1, 1793. Dumouriez conquered Dutch Brabant; but the prince, the subject of this article, delivered it, by the aid of the troops of the allies, after the victory at Neerwinden, March 18, gained by prince Coburg, in the Austrian service, over Dumouriez. The crown prince now prevented the French from entering Western Flanders. But, September 13, he was attacked in his position between Menin and Werwick, with such superior force that he was obliged to retreat behind the Scheldt, after a long resistance, in which his brother, prince Frederick, was wounded. The next year, he took Landrecies. He then forced the enemy to retire behind the Sambre; but, in the great battle on June 26, in which he had been successful at the head of the right wing, he was obliged to retreat, after the French had taken Charleroi by assault, and beaten the left wing at Fleurus. The Austrian forces having retreated, before Pichegru and Jourdan, behind the Meuse, the prince, with his enfeebled army, could only protect the frontiers of the republic, in unison with the duke of York. But the fortresses were reduced, and the ice enabled the enemy to pass the Waal, so that Pichegru entered Utrecht, Jan. 17, 1795. The party of the patriots favoured the enemy, and the stadtholder soon found himself incapable of saving the republic, forsaken by her allies. H
sons, therefore, gave up their commands, Jan. 1
and William V. embarked, on the 18th and 19t
with his family, at Scheveningen, in nineteen p
fishing vessels, for England. Hampton court w
assigned as a residence to the exiled family; b
the two sons soon returned to the continent, in o
der to arm a body of Dutch emigrants at the e
pense of England, which body, however, after t
peace of Basle, was again dissolved. Prince Fr
deric entered the Austrian service, and died
Padua, in 1799. The subject of this article we
with his family to Berlin, where he expected a f
vourable change from the influence of Prussia, th
on friendly terms with France. He occupied hi
self with the education of his children, the cult
tion of science, and the improvement of some e
tates which he had bought in Poland, and on wh
he immediately abolished bondage. His father
ceded to him the places which the diet had
signed him in Germany by way of indemnificati
namely, Fulda, Corvey, Dortmund, &c., Augu
29, 1802, and he took possession of them in t
same year. He lived at Fulda, but spent part
the winter in Berlin. Living himself in the m
economical manner, he established in his new p
sessions an economical administration, and reform
numerous abuses. His impartial treatment of
his subjects, of whatever religion, gained him t
hearts of all. After the death of his father,
took possession of the lands of Nassau belongi
to his family. But, having refused to become
member of the confederacy of the Rhine, he lost t
sovereignty over the lands of Orange, which were d
vided between his relations of Nassau-Usingen a
Nassau-Weilburg, and Murat, grand duke of Ber
He was also threatened with the loss of Fulda if
should continue to decline joining the confeder
tion; but in case he should join, he was to be rewar
ed by the grant of Würtzburg. But he declar
that he would not dishonour the name of Oran
by bending his neck to a foreign master. In Augu
1806, he went to Berlin, where, as commander o
Prussian regiment and lieutenant-general, he su
sequently received the command of a part of t
right wing of the Prussian army between Magd
burg and Erfurt. After the battle of Jena, he w
obliged to follow field-marshal Möllendorf to E
furt, and became a prisoner when Möllendorf c
pitulated. He was, however, permitted to l
with his wife in Prussia. But Napoleon declar
him, the elector of Hessia, and the duke of Brun
wick, to have forfeited their dominions: and Ful
took the oath of allegiance to the emperor, Octob
27. Corvey, Dortmund and the county of Sper
berg, were given, in 1807, to the kingdom of We
phalia and the grand-duchy of Berg. His domai
even those reserved to him by the act of confede
ation, were taken by Berg and Würtemberg; b
Bavaria did not follow their example, and the oth
princes promised to pay him the surplus revenue
the lands. He had gone in the meantime, to Dan
zic, whence he proceeded to Pillau. In the pea
of Tilsit, he was not mentioned. He retained on
his possessions in the duchy of Warsaw, and ag
lived privately in Berlin, where his eldest son w
educated in the military academy. When Aus
was engaged in war with France, in 1809, the u
fortunate prince joined the army of the archdu
Charles, and fought at the battle of Wagram.
then returned to Berlin. In the meantime, par
cularly, however, after the battle of Leipsic, u

influential men in the Netherlands were labouring to prepare the way for the restoration of the house of Orange. William Frederic was then in England, in order to concert, with the British government, measures to support the Dutch. After the battle of Leipsic, the victorious armies approached the frontiers of Holland; the people rose in Amsterdam, Nov. 15 and 16; and even the Hague, in the midst of French troops, declared itself, on the 17th, for the prince. When the prince received the news of these movements, he embarked, and landed, Nov. 29, at Scheveningen. The people received him with demonstrations of joy. In Amsterdam, the commissioners of the provisionary government issued, Dec. 1, the proclamation, "The Netherlands are free!" and "William I. is the sovereign prince of this free country," without being authorized to do so by the nation. The prince yielded reluctantly, and declared that a constitution should be established to secure the liberties of the people. Twenty-three fortified places were yet in the hands of the enemy, who were encamped near Utrecht. But the allies soon drove them from the country. William Frederic hastened the arming of the people, and charged a committee to draw up a constitution, which was adopted, March 29, 1814, by the representatives of the people, and then sworn to by the monarch. He had also again taken possession of his German hereditary possessions, towards the end of 1813. After this the congress of Vienna united Belgium and Liege with the Netherlands, to form a kingdom; and the prince was proclaimed king of the Netherlands, prince of Liege and duke of Luxemburg, under the name of William I., on March 16, 1815, at the Hague. He and his Dutch subjects were both dissatisfied with this arrangement, apprehending that the Dutch commerce would suffer by this union with the manufacturing state of Belgium: the difference of language and religion also presented great obstacles; but England wished to retain possession of several of the former Dutch colonies, and Belgium was given in exchange for them. The king was also obliged to cede to Prussia his hereditary possessions in Germany in exchange for Luxemburg. Since that time, William I. has ruled with great integrity and firmness, as even his enemies have admitted, except in the fiercest heat of party struggles. The king has conscientiously and often scrupulously adhered to the constitution. Justice was always a predominant trait in his character. A committee was charged in 1815, with the drawing up of a general code for the Netherlands. It ended its labours in 1819. June 21, 1816, William became a member of the holy alliance. In 1814, he founded the William order of military merit, and, in 1815, the order of the Belgic lion for civil merit. He resided before the late revolution, alternately at the Hague and in Brussels; lives simply, is very industrious, and accessible to all: and though the majority of the Dutch were anti-Orange, and, therefore, anti-monarchical, he is popular with them, particularly since [illegible] See the article *Belgium*.

WILLIAM, FORT, a fortress in the West Highlands, in the shire of Inverness, situated on the east side of Lochiel, and the south side of the small river Nevis, where it falls into that inlet of the sea, at the distance of sixty-one miles south-west of Inverness, and twenty-nine and a half south-west of Fort Augustus. It is of a triangular form, with two bastions mounting fifteen twelve-pounders. The fort was originally built during the usurpation of Cromwell, by general Monk, and occupied much more ground at that time than it does at present, accommodating no fewer than 2000 men. It was then named "the garrison of Inverlochy," from the ancient castle of that name in the neighbourhood. In the time of William III., it was rebuilt on a smaller scale, with stone and lime instead of earth, and received its name in honour of that monarch. In the year 1745, it stood successfully a siege of five weeks, but it is by no means a place of strength. It is now garrisoned by a governor, fort-major, and a company of soldiers.

WILLIAMS, HELEN MARIA; a distinguished writer on history and general literature, was born in the north of England, in 1762. She went to London at the age of eighteen, and was introduced to the literary world by doctor Andrew Kippis. The first production of her pen appears to have been a legendary tale, in verse, entitled Edwin and Eltruda (1782); and this was followed by an Ode on Peace (1783); Peru, a poem (1784), and a Collection of Miscellaneous Poems (1786, 2 vols., 8vo.). In 1788, she published a poem On the Slave-Trade; and, the same year, she visited France, where she formed many literary and political connexions. In 1790, she went again to France, and settled at Paris; and soon after appeared her Letters written from France, in the Summer of 1790, of which she published a continuation in 1792. The object of these, and of some contemporary productions of this lady, was to recommend the doctrines of the Girondists; and, consequently, on their fall, under the tyranny of Robespierre, she incurred great danger, and, being arrested, was for some time a prisoner in the Temple at Paris. On obtaining her freedom, she renewed her application to literary pursuits. Besides many works of minor importance, she engaged in an English translation of the Personal Narrative of the Travels of Humboldt and Bonpland in America (1814—1821, 6 vols., 8vo.). Miss Williams died at Paris, in December, 1827. In addition to the works already mentioned, she wrote Julia, a novel (2 vols.); a Narrative of Events in France, in 1815; Letters on the Events which passed in France since the Restoration in 1815; and other pieces; and she was at one time a contributor to the New Annual Register.

WILLIAMS, ROGER, was born of reputable parents in Wales, in 1598. He was educated at the university of Oxford, was regularly admitted to orders in the church of England, and preached for some time as a minister of that church; but embracing the doctrines of the Puritans, he rendered himself obnoxious to the laws against non-conformists, and embarked for America, where he arrived, with his wife, in February 1631. In April following, he was called by the church of Salem, as teaching elder, under their then pastor Mr Skelton. This proceeding gave offence to the governor and assistants of the Massachusetts bay, and, in a short time, he removed to Plymouth, and was engaged as assistant to Mr Ralph Smith, the pastor of the church at that place. Here he remained until he found that his views of religious toleration and strict non-conformity gave offence to some of his hearers, when he returned again to Salem, and was settled there after Mr Skelton's death, in 1634. While here, and while at Plymouth, he maintained the character he had acquired in England—that of "a godly man and zealous preacher." He appears, however, to have been viewed by the government of that colony with jealousy, from his first entrance into it. He publicly preached against the patent from the king, under which they held their lands, on the ground that the king could not dispose of the lands of the natives without their consent. He reprobated the "calling of *natural* men to the exercise of those holy ordinances of prayers, oaths, &c."; but what rendered him most obnoxious, undoubtedly, was his insisting that the magistrate had no right to punish for breaches of the first table, or, in other words, "to deal in matters of conscience and religion." These causes, conspiring with others of less importance, finally occasioned a decree of banishment against him, in the autumn of 1635, and he was ordered to depart the jurisdiction in six weeks, but was subsequently permitted to remain until spring, on condition that he did not attempt to draw any other to his opinions; but "the people being much taken with the apprehension of his godliness," in January following, the governor and assistants sent an officer to apprehend him, and carry him on board a vessel then lying at Nantasket, bound to England; but before the officer arrived, he had removed, and gone to Rehoboth. Being informed by governor Winslow, of Plymouth, that he was then within the bounds of the Plymouth patent, in the spring he crossed the river, and commenced the settlement of Providence. He afterwards embraced some of the leading opinions of the Baptists, and, in March, 1639, was baptized by immersion, at Providence, by Ezekiel Holliman, whom he afterwards baptized. He formed a society of this order, and continued preaching to them for several months, and then separated from them, doubting, it is said, the validity of all baptism, because a direct succession could not be traced from the apostles to the officiating ministers. In 1643, Williams went to England, as agent for the colonies at Providence, Rhode Island, and Warwick, to solicit a charter of incorporation, which he finally procured, and returned in September, 1644. In 1651, serious difficulties having been raised in the colony, by Coddington's procuring a charter, which gave him almost unlimited authority over the islands of Narragansett bay, Williams and Clarke were despatched agents of the colony to procure a revocation of it. This they effected in October, 1652. Williams returned in 1654; but Clarke remained in England, and procured a second charter in 1663. He was several times, both before and after this period, elected to the office of president or governor of this colony. He died in April, 1683, at Providence. Very few incidents in his life are to be collected from his writings; and the prejudices of contemporary, and even later historians, who have mentioned him, render it difficult to form a true estimate of his character. He appears to have been a man of unblemished moral character, and of ardent piety, unyielding in opinions which he conceived to be right, and not to be diverted from what he believed to be duty, either by threats or flattery. After he was banished, though he conceived himself to be an injured man, he gave his persecutors information of the Indian plot, which would have destroyed their whole settlement, and concluded treaties for them, which insured their peace. He is accused, and not unjustly, of frequent changes in his religious sentiments; but these changes should be ascribed to conviction, for they militated against his worldly interest. He was at all times the undaunted champion of religious freedom; and, strange as it may seem, this was probably the first thing that excited the prejudices of the Massachusetts and Plymouth rulers against him. He w accused of carrying this favourite doctrine so far to exempt from punishment any criminal wh pleaded conscience; but this he expressly deni Of the publications of Williams that have reach us, the first, in order of time, is his Key into th Language of America, republished in 1827. Th it would seem, was composed during his voyage t England, in 1643, and was printed at London soo after his arrival. It preceded Eliot's works on th same subject. Very few copies of the original ed tion are now extant. The one belonging to th Massachusetts historical society is the only o known to be in America. His next work w his Bloody Tenent, written in answer to Cotton treatise, which upheld the right and enforced th duty of the civil magistrate to regulate the do trines of the church. This called forth a repl from Cotton, entitled the Bloody Tenent Washe and made White in the Blood of the Lambe; a this was followed by a rejoinder from William entitled the Bloody Tenent yet more Bloody, b Mr Cotton's Endeavour to Wash it White. I these works of Williams, the doctrine of religio liberty and unlimited toleration are illustrated i strong language, and supported by stronger arg ments—arguments that preceded those of Lock Bayle and Furneau. In 1672, Williams had a co troversy with the Quakers. He maintained a publ dispute with them at Newport and at Providenc in August, 1672, and afterwards published h George Foxe digged out of his Burrowes, in answ to a work of Fox. This is a rare book

WILLIAMSBURG; the seat of justice f James City county, Virginia, twelve miles west Yorktown; population about 1500. It was fo merly the metropolis of the state, but has great declined. The college of William and Mary w founded here in 1693, in the time of king Willia who gave it an endowment of £2000 and 20,0 acres of land, together with a revenue of a penny pound on tobacco exported to the plantations fr Virginia and Maryland. To these, other endow ments were added; and the whole annual incom of the college was formerly estimated at £300 The income has greatly diminished, and its acco modations are poor.

WILLIAMSON, HUGH, was born December 1735, in Chester county, Pennsylvania, and gradu ated at the college of Philadelphia, May 17, 175 He early showed much fondness for mathematic He studied theology, and was licensed to preach but the infirm state of his health induced him relinquish the pulpit, and to turn his attention the study of medicine. From 1760 to 1763, was professor of mathematics in the college of Ph adelphia. In 1764, he went to Edinburgh to pursu his medical studies. He next proceeded to Londo where he studied twelve months, and then repair to the university of Utrecht. After his return Philadelphia, he practised for some years with gr success, but, at length, gave up the profession account of the weak state of his health, and r mained a number of years devoted to literary a philosophical pursuits. In 1769, he was appointe by the American philosophical society a member the committee to observe the transit of Venus a Mercury over the sun's disk, which occurred in th year. The results of the observations made by h are contained in the first volume of the Transa tions of the society. In 1773, he was appointe in conjunction with doctor Ewing, to make a to through England, Scotland and Ireland, to solicit benefactions for the academy of Newark, in Delaware; but, owing to the irritation subsisting at the time against the colonies, they were not very successful. He returned to America in 1777. In 1787, he was one of the delegates from North Carolina to the convention at Philadelphia that framed the federal constitution, of which he was a decided advocate. In 1811, he published, in one volume, 8vo., his Observations on the Climate in different Parts of America, compared with the Climate in corresponding Parts of the other Continent, and exposed the futility of the assertion that America is a country in which the frigid temperature and vice of the climate prevent the growth and expansion of animal and vegetable nature, and cause the degeneration of man and beast. In 1812, appeared his History of North Carolina (2 vols., 8vo.)—a valuable addition to the annals of the American continent. His death occurred suddenly, May 22, 1819, in the eighty-fifth year of his age.

WILLOW (*salix*). The species of willow are very numerous, and most of them are confined to the more northern parts of the globe. They are trees or shrubs, with alternate and usually lanceolate leaves, and inconspicuous flowers, which are diœcious, and disposed in aments. Most of them grow in moist situations, and are constant attendants along the margins of streams and water-courses. This genus is considered the most difficult to understand of the whole vegetable world, as the male and female flowers are situated upon different plants, appear before the expansion of the leaves, and soil, situation, and climate, produce a very considerable change in their appearance. The bark of some willows is employed for tanning, and sometimes, from its bitter and astringent properties, is given, in intermittent fevers, as a substitute for cinchona. The long pliant branches of the osiers are used for the fabrication of baskets, and other agricultural implements; and they are cultivated pretty extensively for these purposes.

The weeping willow (*S. Babylonica*), so generally admired for its long, pendent branches, grows wild in Persia, and, besides, has long been a favourite ornamental tree in China. Almost all the willows are of the easiest propagation and culture. Care should be taken, however, with most of them, that the soil is not absolutely bog or marsh.

WILMOT. See *Rochester*.

WILNA (*Wilno*); a city of Russia, capital of the government of Wilna, formerly capital of Lithuania, on the Wilia, 170 miles east of Königsberg, 350 south-south-west of Petersburg; lon. 25° 17′ east; lat. 54° 41′ north; population in 1826, 25,000, Jews 5000; see of a Greek archbishop and of a Catholic bishop. It has thirty-five Roman Catholic churches and convents. It is situated in a hilly country, and occupies several eminences near the river; is about four miles in circuit, built chiefly of wood, very deficient in cleanliness, and exhibits a striking contrast of wretchedness in some buildings, and gorgeousness in others. It contained a Catholic university, established in 1579, and new-modelled in 1803. In 1832, the university was suppressed, undoubtedly on account of the insurrection of Lithuania. Here is a seminary for the education of clergy of the Greek church, and one for the education of Catholic clergy, and a college of Piarists. The trade consists in the export of corn, hemp, flax, honey, wax, and other products of the surrounding country, conveyed by the Wilia and Niemen to Memel and Königsberg.

The *Government of Wilna* contains 25,000 square miles, and 1,350,000 inhabitants. It is a plain, with some slight elevations, woods, morasses, and lakes. In general, the soil is fertile, producing much grain, flax, and hemp. The manufactures are unimportant. The inhabitants are Lithuanians, Lettes, Poles, Jews, Greeks, Tartars, Russians, and Germans.

WILSON, ALEXANDER, the celebrated American ornithologist, also distinguished as a writer of Scottish poetry, was born at Paisley, in 1766. His parents were industrious people of an humble rank in life; and in his thirteenth year, young Wilson was bound apprentice to a weaver. After serving an apprenticeship of three years, and working as a journeyman weaver for about four years, during which period he had cultivated his mind by his own unaided exertions, and had already given indications of poetical talent, disgusted with the confined and tedious nature of his employment, he abandoned the loom, and adopted the life of a wandering pedlar. Three years were spent in this mode of life; and, in 1789, having already prepared a volume of poems for publication, he offered his muslins, and solicited subscriptions for his work at the same time. Unsuccessful in the latter object, and tired of a pedlar's life, he once more returned to the loom. In 1791, he published a poem under the title of the Laurel Disputed, on the comparative merits of Allan Ramsay and Robert Ferguson, and, in 1792, his Watty and Meg, which, having appeared anonymously, was ascribed to Burns; a mistake, which the author, of course, felt as the highest acknowledgment of its merits. In humour and truth of description, it is certainly not surpassed by any production of the Scottish muse. Having soon after written a severe satire upon a person in Paisley, Wilson was thrown into prison: he was likewise looked upon with suspicion as a member of the society of the Friends of the People, who hailed the French revolution as a new morning of liberty; and, impelled by these circumstances, he determined to come out to the United States. He arrived at Newcastle, in the Delaware state, in 1794, and again resumed his former trade, but, after a while, turned school-master, acting in this capacity in several places in Pennsylvania. It was while thus engaged at Kingsess, near Philadelphia, that he became acquainted with Mr Bartram, the naturalist, and Mr Lawson, an engraver, whose tastes and instructions proved the occasion of calling out his own talents. He had already undertaken some long excursions for making ornithological researches, and devoted much time to the study, when he was engaged, in 1806, to assist in editing the American edition of Ree's Cyclopædia, and now began to prepare for the publication of his work on American ornithology. The first volume of this work was published in 1808, and the seventh in 1813. The interval had been passed in exploring different parts of the country, for the purpose of extending his observations, collecting specimens, and watching the habits of birds in their native haunts. In 1813, the literary materials for the eighth volume of the Ornithology were ready; but its progress was greatly retarded for want of proper assistants to colour the plates. Wilson was, therefore, obliged to undertake the whole of this department himself, in addition to his other duties, and these multifarious labours, by drawing largely upon his hours of rest, began rapidly to exhaust his constitution. When his friends remonstrated with him upon the danger of his severe application, he answered, "Life is short, and without exertion nothing can be performed." A fatal dysentery at last seized him, which, after a few days' illness, carried him off, upon the twenty-third of August, 1813, being then only in his forty-eighth year. According to the authority of an American gentleman who was intimate with him, his death was accelerated by an incident in singular keeping with the scientific enthusiasm of his life. While sitting in the house of one of his friends, he happened to see a bird of a rare species, and which he had been long seeking for in vain, fly past the window. He immediately rushed out of the house, pursued the bird across a river, over which he was compelled to swim, shot and returned with the bird, but caught an accession of cold which carried him off. He was buried next day in the cemetery of the Swedish church, in the district of Southwark, Philadelphia, with all the honours which the inhabitants could bestow on his remains. The clergy and all the public bodies walked in procession, and wore crape on their arms for thirty days. A simple marble monument was placed over him, stating shortly the place and year of his birth, the period of his emigration to America, and the day and cause of his death. The whole plates for the remainder of the Ornithology having been completed under Wilson's own eye, the letter-press of the ninth volume was supplied by his friend Mr George Ord, who had been his companion in several of his expeditions, as also a memoir of the deceased naturalist. Three supplementary volumes, containing American birds not described by Wilson, have been published by Charles Lucien Bonaparte (fol., 1825—1828).

There have been few instances, where the glowing fire of genius was combined with so much strong and healthy judgment, warmth of social affection, and correct and pure moral feeling, as in the case of Alexander Wilson. He is said to have been strikingly handsome in person, although rather slim than robust, with a countenance beaming with intelligence, and an eye full of animation and fire. His career furnishes a remarkable example of the success which, sooner or later, is the reward of perseverance. It is true he did not attain riches, but upon the possession of these his happiness was not placed. He wished, to use his own words, "to raise some beacon to show that such a man had lived," and few have so completely achieved the object of their ambition.

WILSON, James, a signer of the American Declaration of Independence, was born in Scotland about the year 1742. His father was a respectable farmer. He studied successively at Glasgow, St Andrew's, and Edinburgh, and then left Scotland for America. He arrived, in 1776, in Philadelphia, where he was first employed as a tutor in the Philadelphia college and academy, in which capacity he acquired a high reputation as a classical scholar. In a few months, however, he relinquished that occupation, and commenced the study of the law. At the expiration of two years, he was admitted to the bar, and began to practise, first at Reading, and then at Carlisle. From the latter place he removed to Annapolis, and, in 1778, returned to Philadelphia, where he continued to reside during the rest of his life. He was elected, in 1775, a member of congress, and took his seat on the 10th of May. He was a uniform advocate of the declaration of independence, though he may have thought, perhaps, that the measure was brought forward prematurely: he voted in favour of it, as well on the first of July, in opposition to the majority of his colleagues from Pennsylvania, as on the 4th, in conjunction with the majority. In 1777, he was superseded in congress, through the influence of party spirit; but, in 1782, he was again honoured with a seat. In 1779, he received the appointment of advocate-general for the French government in the United States, an office, the duties of which were both arduous and delicate. He resigned it in 1781, in consequence of difficulties respecting the mode of remuneration. He continued, however, to give advice in such cases as were laid before him by the ministers and consuls of France, until 1783, when the French transmitted to him a present of ten thousand livres. In 1787, Mr Wilson was a member of the convention which framed the constitution of the United States, and was one of the committee who reported the draught. In the state convention of Pennsylvania, he was principally efficient in causing the constitution to be adopted. He was subsequently a member of the convention which changed the constitution of Pennsylvania, to render it conformable to that of the United States, and, being one of the committee appointed to prepare, was intrusted with the duty of making the draught of the necessary form. In 1789, he was appointed, by general Washington, a judge of the supreme court of the United States; and, whilst on a circuit in North Carolina, in the discharge of his functions as such, he died at Edenton, 28th of August, 1798, aged about fifty-six years. As a lawyer and judge, Mr Wilson was eminent for talent and integrity. In private life he was courteous, kind, and hospitable. His political and legal disquisitions are extant in three volumes, and much esteemed.

WILSON, Richard, an English landscape painter, was born at Pineges, in Montgomeryshire, in 1714. After receiving a classical education, he was sent to London, and placed as a pupil with an obscure portrait painter. On leaving his master, he first practised in the same branch of his profession in London, but with no great success. At length he went to Italy, where he occasionally exercised his talents in studies of landscape; and at Venice meeting with Zuccarelli, that artist persuaded him to devote himself wholly to the cultivation of that department of the art in which he attained so much excellence. After staying some time at Rome and Naples, where he acquired great reputation, he returned to England in 1755, and settled in the metropolis. He had for a while much employment; but he was at length doomed to undergo indifference and neglect, and was reduced to solicit the office of librarian to the royal academy, of which he was one of the brightest ornaments. He died in May, 1782. His taste was exquisite, and whatever came from his easel bore the stamp of elegance and truth. If posthumous fame could compensate for contemporary neglect, the fate of Wilson might be considered as fortunate; for he has been ranked among the greatest artists of modern times.

WILTSHIRE; an inland county of England, having Gloucestershire on the north, Berkshire and Hampshire on the east, Dorsetshire on the south, and Somersetshire and Gloucestershire on the west. The boundaries of the county are very irregular, not following the course of any river. The area of the county is equal to about 1379 square miles, or 882,560 statute acres.

Wiltshire may be said to be naturally divided into two portions, by an irregular range of hills, which extends transversely through the greater part of the county, in a direction inclining from the north-east to the south-west. These districts are usually denominated South and North Wiltshire, and differ very materially from each other, not only in appearance, but in almost every distinguishing quality. South Wiltshire forms the western division of a vast track of chalk hills, comprising a considerable part of Hampshire, and having for its boundaries the rich lands of Berkshire, and the extreme verge of the Marlborough hills on the north; the broken ground of Somersetshire on the west; the New Forest of Hampshire on the south; and the heaths of Surrey and Sussex, together with the West Downs of the latter county, on the east. North Wiltshire differs completely from the southern division of the county in its general appearance. Instead of a constant series of "chalky waves," the aspect of this district, which extends from the verge of the Downs to the hills of Gloucestershire, is nearly that of a perfect flat, the few deviations from the ordinary level being for the most part so gradual as scarcely to be perceptible on a cursory view. The country here, moreover, is so extremely close and well wooded, that when viewed from any of the surrounding hills, it appears like one vast plantation of trees. If examined in detail, however, it is found also to contain many extensive tracts of rich pasture land, situated on the banks of the lower Avon and the Thames, and of such smaller streams as flow into the one or the other of these rivers.

With regard to agriculture, the southern division may be regarded as one vast sheep farm. The summer stock of sheep kept in this division alone was formerly estimated at somewhat more than 500,000 head, including lambs, of which at least 150,000 were bred annually. In the south-west portion of Wiltshire, adjoining to Dorsetshire, a considerable number of cows are kept for the purpose of making butter, in order to assist, with the contiguous parts of the latter county and Somersetshire, in the supply of the cities of Bath and Salisbury, and some towns of the northern district, which lie immediately in the neighbourhood of the great cheese dairies, where whey butter only is made. With respect to the arable cultivation of this district, it possesses no very peculiar features. Fallowing is in very general use; and the chief manure is the produce of the sheep-fold. The most general crops on the high white lands are wheat and barley, and on the grounds in the valleys, green crops for the winter maintenance of the sheep and cattle. Potatoes are likewise planted in considerable quantities on the sandy veins which run through the county in this division. On the meadow lands, irrigation is practised perhaps more extensively here than in any county of England, and with signal advantages. Indeed, water meadows are indispensable appendages to a South Wiltshire farm; as without them it would be almost impossible to pursue the present system of sheep breeding, which is certainly more profitable to the farmer, to his landlord, and to the country at large, than any other mode of agriculture that could be substituted in its stead. The distinguishing feature of the agriculture of North Wiltshire is the pasturage or grazing system; which is conducted principally with a view to the supply of the dairy with milk for the manufacture of cheese. Great numbers of cows are therefore kept in that district, and a considerable part of them is likewise reared in it. The cheese of North Wiltshire has long been deservedly famed; though for some time after it became the staple commodity here, it was sold in the London market as the manufacture of Gloucestershire. Now, however, much of it is well known under the application of the "North Wiltshire," and is very generally esteemed superior to the cheese of the adjoining county. In all things relative to the dairy, indeed, the inhabitants of this district probably excel those of any part of England. But though the principal part of the pasture lands in this district is devoted to the purposes of the dairy, a considerable portion of them is also appropriated to grazing cattle for sale. Pigs are also reared in vast numbers in different parts of the county.

The manufactures of this county are of considerable importance. Woollens were formerly made to a great extent; at Salisbury the manufacture has greatly fallen off within these 20 years, and very little is now made. Salisbury likewise carries on a considerable manufactory of cutlery and steel goods, which are considered equal in workmanship to any made in the kingdom. Carpets of an excellent quality, kerseymere and linsey are made at Wilton. Broad cloths and other descriptions of woollen goods are made at Bradford, Heytesbury, Chippenham, Westbury, Trowbridge, and all the adjacent towns and villages. Linen is manufactured at Mere; fustians and thicksets at Aldbourn. Linen and silk are made to a considerable extent at Stourton and Maiden-Bradley. The ale called "Wiltshire" and "Kennet," is in great estimation, being principally sent to London. The principal export of the county consists of its agricultural produce; and besides supplying its own extensive manufactories, it sends a large proportion of its wool out of the county. The imports consist chiefly of what is required for domestic consumption, such as coal, &c. Population of the county in 1831, 240,200.

WINCHESTER; an ancient city of England, in Hampshire, situated near the river Itchin, 62 miles S. W. by W. from London. It is about half a mile long, from east to west, and contains nine parish churches. It was known in the time of the Romans, who made it one of their military stations. During the reign of Egbert, it became the metropolis of the kingdom, but was soon rivalled by London. Its commerce was also obstructed by various accidents; and, in the reign of Henry VIII. it received a blow, in the dissolution of monasteries and the destruction of religious houses; after which, Winchester contained scarcely any thing more than a shadow of its former grandeur. In the reign of Charles I., the city and castle of Winchester, which remained faithful to that monarch, were compelled to surrender to Cromwell, who destroyed the works of the castle, together with the fortifications of the city. The cathedral of Winchester is one of the most interesting buildings in England. The original structure, built by Saxon kings, is entirely destroyed. In the eleventh century, the cathedral was rebuilt by bishop Walkelin. The next improvement was undertaken by William de Edyngton, treasurer to Edward III., and was finished by bishop Wykeham in 1394: the eastern part was rebuilt at the beginning of the sixteenth century. The length of the cathedral is 556 feet. Next to the cathedral, in interest and antiquity, stands the college of St Mary's, founded by Wykeham in 1387, as a nursery for his New College at Oxford. The foundation provides for a warden, ten fellows, seventy scholars, one master, three chaplains, besides many subordinate members. The buildings consist of two quadrangles, a cloister, library, and a large modern school-room. The windows of the chapel are filled with stained glass; and over the altar is a picture (by Le Moine) of the Salutation. The tower, built in the fifteenth century, is remarkable for its symmetry. Over the school-room door is a bronze statue of Wykeham, cast by Ciber (1692). The ecclesiastical buildings in this city were formerly numerous, the churches and chapels alone amounting to upwards of ninety, and several having colleges and monasteries attached to them. Scarcely twelve of them now remain. Here are several meeting-houses for dissenters. Near the college are the ruins of the celebrated episcopal residence, called Wolvesey castle, destroyed by Cromwell, in 1646. Winchester castle, built by William the Conqueror, occupied the spot where the palace, erected by Charles II., now stands, and which, during the war, was converted into a barrack. The area of the castle was about 850 feet in length, north and south, and 250 in breadth. The chapel belonging to the castle has been converted into a county hall. At the east end is suspended the curiosity called *Arthur's round table*, which tradition has attributed to king Arthur. Near the cathedral is the Widow's college, founded by bishop Morley, for the relicts of deceased clergymen. The city contains two almshouses, and a great number of charitable bequests belong to it. In the town-hall are the city archives, the original Winchester bushel, given by king Edgar, with other measures, both for quantity and length, fixed as standards by succeeding princes, and various curious memorials of antiquity. At the west end of the town is an obelisk, having an inscription commemorative of the calamities occasioned by the plague, in 941, 1348, and 1668. Two members are sent to parliament. Winchester has very little trade. An ancient wool-combing manufactory still exists in it; and, of late years, the silk manufacture has been introduced. There is a navigable river or canal to Southampton. All the public business of Hampshire is, however, transacted here. Its cathedral and its college ensure to it the residence, also, of a considerable number of the superior clergy, with their families. Population, in 1831, 9,212.

WINCHESTER BUSHEL; the English standard until 1826, when the imperial standard bushel was introduced. (See *Measures*). The Winchester bushel is eighteen and a half inches wide and eight inches deep, and contains 2150·42 cubic inches, while the imperial standard bushel contains 2218·40 cubic inches. To convert Winchester bushels into imperial bushels, multiply the Winchester measure by 31, and divide by 32. The name of the old measure was derived from the circumstance that the standard measure was kept at Winchester.

WINCKELMANN, JOHN JOACHIM. This scholar, who has done so much for the criticism and history of art, and the study of antiques, was born at Stendal, in Altmark, Dec. 9, 1717, and was the son of a shoemaker. Extreme poverty could not suppress his early-awakened love of study. The schoolmaster of his native place, soon became attached to him, and took him into his family. After having made considerable proficiency in Greek and Latin, he went, in 1735, to a gymnasium at Berlin, and thence on foot to Hamburg, in order to purchase some ancient classics, with money begged on the way. In 1738, he entered the university of Halle, where he lived for two years on a small stipend, and the contributions of others; but, as ancient literature and the belles-lettres interested him more than theology, he neglected the lectures, but assiduously frequented the libraries, and occupied himself with the ancients. After having been a private tutor and an usher for a number of years, during which he pursued his studies with indefatigable zeal, he applied, in 1748, to the minister, count von Bünau, of Nöthenitz, near Dresden, and offered his services as a librarian. The count had already a librarian, but expressed his willingness to appoint him secretary of the library, with a salary of eighty rix-dollars. He accepted the offer, and lived some years employed partly in his private studies, partly in labour for the count. The proximity of Dresden, with its rich treasures of art, and the acquaintance of some artists, awakened in him a love of the arts. To visit Italy, the native country and the home of the arts, was now the great object of his wishes. At length, father Rauch, the confessor of the king of Poland, enabled him to live in Rome by a small pension. In 1744, he formally embraced the Catholic religion, and left the service of count Bünau; but, before going to Rome, he remained for a time in Dresden, devoted to the study of the arts. In the autumn of 1755, he set out for Rome, with a pension from the king of 200 rix-dollars for two years. There he soon found friends and patrons, and had an audience of Benedict XIV who received him graciously, and promised him his protection. Winckelmann now devoted himself to the study of the works of ancient and modern art. In the spring of 1758, he visited Naples, where he became acquainted with the most distinguished men, and obtained access to the antiquities of Portici, Herculaneum, and Pompeii. After an absence of ten weeks, he returned to Rome. In September, 1758, at the repeated invitation of count Muzel Stosch, who had inherited from his uncle one of the richest and most beautiful cabinets of gems, he paid a visit to Florence, where he spent some months in arranging and making a catalogue of that collection. This catalogue appeared at Florence, under the title *Description des Pierres gravées du feu Baron de Stosch*. About this time, he accepted the situation of librarian, and superintendent of antiquities to cardinal Albani, who gave him the use of his house, and a salary of 120 scudi. In the summer of 1760, he finished the *Anmerkungen über die Baukunst der Alten*, which was published two years after in Germany. In 1762, Winckelmann, in company with count Brühl, again visited Naples and its remarkable environs, and soon after gave the discoveries and observations made there to the public, in his Letter to Count Brühl respecting the discoveries made at Herculaneum. Five years afterwards, he published his *Monumenti antichi inediti*, in the Italian language, and for the benefit of the Italians. In 1763, he published a small essay On the Perception of the Beautiful. In the same year, he was made superintendent of all the antiquities in and about Rome, with a monthly salary of 12—15 scudi. In the beginning of 1764, appeared his principal work, *Geschichte der Kunst*. In the same spring, he made a third journey to Naples, the results of which he published in the *Nachrichten von den* neuesten *Herculanischen Entdeckungen.* In 1767, he published Notes to his History of Art. In April, 1768, he set out on a journey to Germany. He arrived at Vienna May 12, and was received with great honour by prince Kaunitz and others, and was presented, at Schönbrunn, to the empress Maria Theresa, who received him with distinction, and bestowed upon him presents of value; and, in the beginning of June, he departed for Trieste. There he was joined by an Italian, named Francesco Arcangeli, a villain, who had been, a short time before, condemned to death in Vienna, but had been pardoned, and banished from the country. His obsequiousness won the confidence of the unsuspecting Winckelmann, who thoughtlessly showed him his gold medals, and other articles of value. Arcangeli undertook the care of the affairs of the journey, while Winckelmann remained in the inn. June 8, as he sat writing at table, the Italian entered his chamber to announce his sudden departure, and to take leave. He asked to see once more the gold medals; and while Winckelman was kneeling before the box, about to take them out, the Italian threw a noose around his neck, and inflicted five mortal stabs in the belly of the unfortunate man, and then fled without taking any thing. He was subsequently apprehended, and broken on the wheel. Winckelmann expired in a few hours, having made his will, in which he appointed cardinal Albani his sole heir. His manuscript of the second edition of the *Geschichte der Kunst*, which he carried about him, came into the possession of the imperial academy of fine arts at Vienna, which, in 1776, caused an edition to be published from it. The great merit of Winckelmann consists in his elucidation of the principles of art, and his exhibition of the works of art in their true character and connexion. His treatises, moreover, contain a great mass of historical illustrations. With the exception of the *Monumenti inediti*, the *Description des Pierres gravées*, and the various collections of letters, all his works may be found in the edition begun by Fernow, and finished by Meyer and Schulze (Dresden, 1808—17, 7 vols.)—See Göthe's excellent treatise *Winckelmann und sein Jahrhundert.* A supplement to the biographical and literary notices of Winckelmann has been published by Gurlitt, (Hamburg, 1820.)

WINCKELRIED. See *Winkelried.*

WIND; a sensible current in the atmosphere. The motions of the atmosphere are subject in some degree, to the same laws as those of the denser fluids. If we remove a portion of water in a large reservoir, we see the surrounding water flow in to restore the equilibrium; and, if we impel in any direction a certain portion, an equal quantity moves in a contrary direction, from the same cause; or if a portion, being rarefied by heat, or condensed by cold, ascends in the one instance, and descends in the other, a counter-current is the visible and natural result; and similar effects are found to follow the same causes in the atmospheric fluid; thus no wind can blow without a counter or opposite current; nor can any wind arise without a previous derangement of the general equilibrium, the general causes of which may be stated as follows:—1. The ascent of the air over certain tracts heated by the sun; 2. evaporation, causing an actual increase in the volume of the atmosphere; 3. rain, snow, &c., causing an actual decrease in its volume, by the destruction of the vapour. In the Philosophical Transactions of the Royal Society of London, (vol. 51st), there is a table of the different velocities and forces of winds drawn from a considerable number of facts and experiments, which give the following results:—

Velocity of the Wind.		Perpendicular Force on one square Foot in Avoirdupois Pounds and Parts.	
Miles per Hour.	Feet per Second.		
1	1·47	·005	Hardly perceptible.
2	2·93	·020	Just perceptible.
3	4·4	·044	
4	5·87	·079	Gently pleasant.
5	7·33	·123	
10	14·67	·492	Pleasant, brisk.
15	22·	1·107	
20	29·34	1·968	Very brisk.
25	36·67	3·075	
30	44·01	4·429	High wind.
35	51·34	6·027	
40	58·68	7·873	Very high wind.
45	66·01	9·963	
50	73·35	12·300	Storm or tempest.
60	88·02	17·715	Great storm.
80	117·36	31·490	Hurricane.
100	146·7	49·200	Hurricane that tears up trees and carries buildings before it.

Currents thus produced may be permanent and general, extending over a large portion of the globe; periodical, as in the Indian ocean, or variable and occasional, or, at least, uncertain, as the winds in temperate climates. General or permanent winds blow always nearly in the same direction, and are called *trade-winds.* On the north of the equator, their direction is from the north-east (varying at times a point or two of the compass each way): on the south of the equator, they proceed from the south-east. The origin of them is this:—The powerful heat of the torrid zone rarefies, or makes lighter, the air of that region: the air, in consequence of this rarefaction, rises, and, to supply its place, a colder atmosphere from each of the temperate zones moves towards the equator. But (as in the case of the polar currents in the ocean) these north and south winds pass from regions where the rotatory motion of the earth's surface is less to those where it is greater. Unable at once to acquire this new velocity, they are left behind, and, instead of being north and south winds, as they would be if the earth's surface did not turn round, they become north-east and south-east winds. The space included between the second and fifth degrees of north latitude is the internal boundary of the two winds; and this space experiences calms, frequently interrupted, however, by violent storms. The reason why it is situated to the north of, instead of exactly at, the equator, seems to be, that the northern hemisphere is warmer than the southern; for, since the trade-winds are the result of the continual ascent of heated air in the equatorial parts, their internal boundary will be where the principal ascent is going on, that is, where the annual temperature is the highest, which, on account of the above-mentioned inequality of temperature in the two hemispheres, will not be at the equator, but somewhat to the north of it. The external limits of the trade-winds are, at a medium, in about the thirtieth degrees of north and south latitude respectively; but each limit, as the sun approaches the neighbouring tropic, declines farther from the equator. The position of the sun has an influence, also, on their strength and direction; for, when that luminary is near the tropic of Cancer, the south-east wind becomes gradually more southerly, and stronger, and the north-east weaker, and more easterly. The effect is reversed when he gets towards the tropic of Capricorn. The trade-winds would blow regularly round the whole globe within the distance of about thirty or forty degrees from the equator each way, if the space within those limits were all covered with water; but the uneven surface and unequal temperature of the land divert and derange them. It is on this account that the trade-winds are constantly experienced only over the open ocean. The larger the expanse of ocean over which they range, the more steadily they blow; thus, in the Pacific, they are commonly more steady than in the Atlantic ocean, and in the South than in the North Atlantic. In sailing from the Canaries to Cumana, on the north coast of South America, it is hardly necessary to touch the sails of the vessel. The voyage across the Pacific, from Acapulco, on the west coast of Mexico, to the Philippine islands, is performed with equal facility; and, if there were a channel through the isthmus of Panama, a westward passage from the Atlantic to China would be more speedy and safe than the usual navigation thither round the cape of Good Hope. The only interruption to the evenness of this voyage would be in the Caribbean sea and the gulf of Mexico, where the trade-wind blows impetuously, and is sometimes interrupted by westerly winds. It would not be possible, however, to return by the same route, because, in sailing east, way must be made to the northward, in order to get beyond the region of the trade into that of the variable winds. Both in the Atlantic and in the Pacific ocean, the current of the trade-winds becomes broader, and more directly east in its course, as it advances from one side to the other of those extensive basins. On the west coast of Africa, owing to the rarefaction which the air undergoes over that continent, the wind is mostly turned towards the shore: from cape Bojador to cape Verde, it is generally north-west, and thence to the island of St Thomas, under the equator, it bends gradually, first to the west, and then to the south-west. Along the coasts of Chili and Peru, a south wind prevails. These are two instances of the interruption which the trade-winds experience in the neighbourhood of large masses of land. In the Indian ocean, the south-east trade-wind prevails between 28° and 10° of south latitude, from within a few degrees of the east side of Madagascar, nearly to the coast of New Holland; but, from the tenth degree of south latitude to the northern shores of that ocean, the uniformity of the tropical movements of the atmosphere is destroyed by the monsoons, which belong to the class of periodical winds. These blow half the year from one quarter, and the other half from the opposite direction. When they shift, variable winds and violent storms prevail for a time, which render it dangerous to put to sea. They, of course, suffer partial changes in particular places, owing to the form and position of the lands, and to other circumstances; but it will be sufficient to give their general limits and directions. Northward from the third degree of south latitude, a south-west wind blows from April to October; from October to April, a north-east. These monsoons extend over the China sea; but here they incline more to the direction of north and south. Between the third and tenth degrees of south latitude, a north-west wind blows from October to April, and a south-east during the other six months of the year: the former is seldom steady in the open sea; but in December and January, it sometimes extends northward a degree or two beyond the equator. These two monsoons have the greatest strength and regularity in the Java sea, and thence eastward towards New Guinea. The facts above exhibited may be thus summed up: From April to October a south-west wind prevails north of the equator; southward of this, a south-east wind; from October to April, a north-east wind north of the equator, and a north-west between the equator and 10° of south latitude; south of this, the usual trade-wind, which is in motion through the whole year. In attempting to account for these movements of the atmosphere over the Indian ocean, the first thing which strikes us is, that the north-east and south-east monsoons, which are found the one on the north, and the other on the south side of the equator, are nothing more than the trade-winds blowing for six months, and then succeeded, for the remainder of the year, by winds directly opposite. It is also to be noticed that the south-west monsoon in the northern, and the north-west monsoon in the southern hemisphere, each prevails while the sun is perpendicular to their respective regions. They are, therefore, connected with the immediate presence of that luminary. If the Indian ocean were not bounded, as it is, by land on the north, the trade-winds would blow over it (at least in the central parts) as they do in the Atlantic and Pacific oceans. But it is well known that water, owing to its transparency, is very little warmed by the sun's rays, whereas the land is powerfully heated by them; consequently, when the sun is between the equator and the tropic of Cancer, India, Siam, and the adjacent countries, become much hotter than the ocean; the air over them is rarefied, and ascends: colder air then rushes in from the Indian ocean, and a south-west wind is produced. When the sun, however, has crossed to the south of the equator, these countries become gradually cool, and the north-east trade-wind resumes its course. At the same time, the north-west monsoon commences in the southern hemisphere, in consequence of the air over New Holland being rarefied by the presence of the sun. The monsoons in the Red sea blow in the direction of the shores; and a similar effect is observed in the Mozambique channel, between Africa and Madagascar, where these winds follow the line of the channel. On the coast of Brazil, between cape St Augustine and the island of St Catharine, and in the bay of Panama, on the west of the isthmus of that name, periodical winds occur, somewhat similar to the monsoons of Asia. The land and sea-breezes, which are common on coasts and islands situated between the tropics, are another kind of periodical winds. During the day, the air over the land is strongly heated by the sun, and a cool breeze sets in from the sea; but, in the night, the atmosphere over the land is cooled, while the sea, and, consequently, the air over it, retains a temperature nearly even at all times; accordingly, after sunset, a land-breeze blows off the shore. The sea-breeze generally sets in about ten in the forenoon, and lasts till six in the evening. At seven, the land-breeze begins, and continues till eight in the morning, when it dies away. These alternate breezes are, perhaps, felt more powerfully on the coast of Malabar than elsewhere. Their effect there extends to a distance of twenty leagues from the land. During summer, the sea-breeze is very perceptible on the coasts of the Mediterranean, and sometimes even as far north as Norway. We thus perceive that, within the limits of from twenty-eight to thirty degrees on each side of the equator, the movements of the atmosphere are carried on with great regularity; but, beyond these limits, the winds are extremely variable and uncertain, and the observations made have not yet led to any satisfactory theory by which to explain them. It appears, however, that, beyond the region of the trade-winds, the most frequent movements of the atmosphere are from the south-west in the north temperate zone, and from the north-west in the south temperate zone. This remark must be limited to winds blowing over the ocean, and in maritime countries; because those in the interior of continents are influenced by a variety of circumstances, among which the height and position of chains of mountains are not the least important. These south-west and north-west winds of the temperate zones are most probably occasioned in the following manner: In the torrid zone, there is a continual ascent of air, which, after rising, must spread itself to the north and south in an opposite direction to the trade-winds below. These upper currents becoming cooled above, at last descend and mix themselves with the lower air: part of them may perhaps fall again into the trade-winds; and the remainder, pursuing its course towards the poles, occasion the north-west and south-west winds of which we have been speaking. It has also been conjectured that these winds may frequently be caused by a decomposition of the atmosphere towards the poles, from part of the air being at times converted into water. See *Hurricane*, *Whirlwinds*, *Harmattan*, *Simoom*, &c.

The following facts, illustrative of the course of the winds in the North Atlantic, are of practical interest. They are taken from a statement of passages made from 1818 to 1827, embracing a period of ten years, and comprising 188 complete voyages.

The passages from New York to Liverpool, during this period, averaged each	24 days.
Same from Liverpool to New York,	38 ..
Shortest passage from New York to Liverpool, in December	16 ..
Longest, in December,	37 ..
Shortest passages from Liverpool to New York, April and February,	22 ..
Longest passage, December to February,	71 ..

These passages are reckoned from city to city.

The passages from New York averaged in

January.	24 days.	July,	24 days.
February.	24 ..	August.	23 ..
March,	23 ..	September	25 ..
April,	24 ..	October,	24 ..
May.	24 ..	November,	22 ..
June,	25 ..	December,	24 ..

Passages from Liverpool averaged in

January.	42 days.	July,	40 days.
February.	40 ..	August,	36 ..
March,	36 ..	September,	33 ..
April,	34 ..	October.	37 ..
May.	35 ..	November,	38 ..
June,	28 ..	December,	48 ..

See Romney's *Tableau des Vents*, &c. (Paris, 1806, 2 vols.).

WIND INSTRUMENTS. See *Instruments.*

WINDMILLS. Pomponius Sabinus or Lætus, a writer of the fifteenth century, says that windmills were in use among the Romans; but the silence of Vitruvius and Seneca, who have spoken of the advantages of wind, have led many writers to doubt the truth of this statement. Some authors have maintained that they were used in France in the sixth century, while others are of opinion that they were brought into Europe by the crusaders; and Gibbon (ch. 61) says that they were first invented in the dry country of Asia Minor. It is certain that they were in use in the western countries of Europe in the twelfth century. (See Beckmann's *History of Inventions*, vol. i.) When wind is employed as the first mover of machinery, it may be applied in two ways—1. by receiving it upon sails which are nearly vertical, and which give motion to an axis nearly horizontal, in which case the machine is called a *vertical windmill*, because the sails move in a vertical plane; and, 2. by receiving it upon vertical sails which move in a horizontal plane, and give motion to a vertical axis, in which case it is called a *horizontal windmill*. As a horizontal windmill consists of vertical sails moving horizontically around a vertical arbour or wind-shaft, no motion would arise on exposing it to the action of the wind, as the effect of the wind upon the sails on one side would be counterbalanced by its action upon the corresponding sails on the opposite side. Hence it is necessary either to screen the sails on one side from the action of the wind, or to construct the sails in such a manner that, when they return against the wind, they present only their edge to its action. The method of screening the returning sails from the wind is adopted in Tartary and some provinces of Spain, and is the most simple that has been tried. When the screen is not used, the sails may be fixed like float-boards, with hinges, on the circumference of a large drum or cylinder, so that, when they are to receive the action of the wind, they stand at right angles to the drum, and when they return against the wind they fold down upon its circumference. Other ingenious methods have also been devised for bringing back the sails against the wind. In the vertical windmill, on the other hand, the arms which carry the sails revolve in a plane facing the wind. In this arrangement, if the sails were in the same plane with the arms, the wind would fall perpendicularly upon them, and merely press the arms against the building, perpendicular to the plane in which they are designed to move. If, on the other hand, the sails were perpendicular to the plane in which the arms move, their edges would be presented to the wind, and would, therefore, offer no resistance, and there would be no motion. In order to make the arms revolve, the sails must, therefore, be placed in some direction intermediate between those of the wind and the plane in which the arms revolve. In determining the angle at which the planes of the sails should be inclined to the axis of motion, or the direction of the wind, it is necessary to consider the sail in motion; and the neglect of this element in the calculation has led to very great errors in theoretical calculations. The sail being in motion, the velocities of the sail and the wind must both be taken into account; for, if the sail moved before the wind with a speed equal to that of the wind itself, no effect would be produced. The effect will depend on the difference of the velocities, that being the velocity with which the wind strikes the sail. Now, as the obliquity of the sail to the wind should depend on the force with which the wind acts upon it, and as those parts of the sail which are nearer to the centre of motion move more slowly than those which are more remote, it follows that the position of the sail should vary at different distances from the centre of rotation. From the experiments of Mr

Smeaton on this subject (Philosophical Transactions, 1759), it appears that the following positions are the best. Suppose the radius to be divided into six equal parts, and call the first part, beginning from the centre, one, the second two, and so on, the extreme part being six:—

No.	Angle with the Axis.	Angle with the Plane of Motion, or Angle of Weather.
1	72°	18°
2	71	19
3	72	18
4	74	16
5	77½	12½
6	83	7

As it is necessary that a windmill should face the wind from whatever point it blows, the whole machine, or a part of it, must be capable of turning horizontally. Sometimes the whole mill is made to turn upon a strong vertical post, and is therefore called a *post mill;* but, more commonly, the roof or head only revolves, carrying with it the windwheel and its shaft, the weight being supported on friction rollers. In order that the wind itself may regulate the position of the mill, a large vane, or weathercock, is placed on the side which is opposite the sails, thus turning them always to the wind. But in large mills the motion is regulated by a small supplementary windwheel, or pair of sails, occupying the place of the vane, and situated at right angles with the principal windwheel. When the windmill is in its proper position, with its shaft parallel to the wind, the supplementary sails do not turn. But when the wind changes, they are immediately brought into action, and, by turning a series of wheelwork, they gradually bring round the head to its proper position.

Adjustment of Sails. On account of the inconstant nature of the motion of the wind, it is necessary to have some provision for accommodating the resistance of the sails to the degree of violence with which the wind blows. This is commonly done by clothing and unclothing the sails; that is, by covering, with canvass or thin boards, a greater or smaller portion of the frame of the sails, according to the force of the wind at different times. A method has been devised for producing the same effect, by altering the obliquity of the sails; and windmills have been so made as to regulate their own adjustment by the force of the wind. If we suppose a windmill, or windwheel, to consist of four arms, and that the sails were connected to these arms at one edge by means of springs, the yielding of these springs would allow the sails to turn back when the wind should blow with violence; and their elasticity would bring them up to the wind whenever its force abated. This effect has been produced by a weight acting on the sails through a series of levers. A loose iron rod, passing through the centre of the axle of the windwheel, receives the action of the weight at one end, and communicates it to the sails at the other.

WINDPIPE (*trachea*); a cartilaginous and membranous canal, through which the air passes into the lungs. Its upper part, called the *larynx*, is composed of five cartilages, the uppermost of which, called the *epiglottis*, closes the passage to the lungs, when a person is in the act of swallowing. The two front cartilages of the larynx, the thyroides, or Adam's apple, and the annular, which resembles a ring, may be felt directly under the skin. The various cartilages of the larynx are united to each other by elastic fibres, and are enabled, by their several muscles, to dilate or contract the passage, and perform those numerous motions which render the larynx so important as an organ of the voice; for, when the air passes directly into the trachea through a wound, it produces little or no sound. (See *Voice.*) From the larynx the canal takes the name of *trachea*, and, after extending as far down as the fourth or fifth vertebra, it divides into two branches, running to the two lobes of the lungs, to which they are distributed by an infinite number of branches. The trachea is furnished with muscular fibres, by the contraction or relaxation of which it is enabled to shorten or lengthen itself, and also to dilate or contract the diameter of its bore. The cartilages of the trachea, by keeping it constantly open, afford a free passage to the air, which we are obliged to be incessantly respiring; and its membranous part, being capable of contraction or dilatation, enables us to receive and expel the air in a greater or less quantity, and with more or less velocity, as may be required in singing and declamation. (See *Respiration*. For the structure of the windpipe in birds, see *Ornithology*.) The membranous structure of the trachea posteriorly, seems likewise to assist in the descent of the food by preventing that impediment to its passage down the œsophagus, which might be expected if the cartilages were complete rings.

WIND SAILS, in a ship, are made of the common sail-cloth, and are usually between twenty-five and thirty feet long, according to the size of the ship, and are of the form of a cone ending obtusely. When they are made use of, they are hoisted by ropes to about two thirds or more of their height, with their bases distended circularly, and their apex hanging downwards in the hatchways of the ship. Above each of these, one of the common sails is so disposed that the greatest part of the air, rushing against it, is directed into the wind sail, and conveyed into the body of the ship, to promote ventilation, &c.

WINDERMERE; a celebrated lake in the county of Westmoreland, the most extensive sheet of water in England. It is situated at the foot of the Furness fells, and is distinguished by the variety of beautiful prospects which it exhibits. It is about fifteen miles in length from north to south, and about one broad on an average, though in many places much less.

WINDHAM, Sir William. See *Wyndham*.

WINDHAM, William. See *Supplement*.

WINDOW. In the most ancient eras, the windows of habitations were very small and narrow; and the same remark is true of the castles and other edifices which were constructed during the middle ages. In the painting on the Greek vase which represents Jupiter about to scale the window of Alcmena, the opening is exceedingly small. According to Seneca, those of the baths of Scipio were so small that they merited not the name, and might rather be denominated *crevices*. As the Romans improved, however, in the elegant arts, this particular was not overlooked; and both their town and country houses were decorated with numerous and ample windows. It was not customary to have them overlooking the street; and they were, in the majority of instances, confined to the interior court of the house. The ancient temples had not, generally, windows: some exceptions, however, exist to this observation. Before the use of glass became common, which was not till towards the end of the twelfth century, the windows in England seem generally to have been composed of paper, which, properly prepared with oil, forms no contemptible defence against the intrusions of the weather, and is a tolerable medium for the admission of light. In warm climates, as in the West Indies, windows are often quite open, without glass or any translucent medium to admit light while it excludes the air. In Russia, salt is used to clean windows from frost, on account of its effect in liquefying this substance. It is rubbed on the glass with a sponge. In England, windows are one of the articles subjected to taxation

WINDSOR, OR NEW WINDSOR; a town in Berkshire, England, situated on the right bank of the Thames, which separates it from Buckinghamshire, twenty-two miles west of London. It is beautifully situated on the side of a hill, and has many handsome buildings; but its chief ornament is its castle, which it owes to William the Conqueror. (See the next article.) On the south side of the town is Windsor Great Park, well stocked with deer, in which is situated the cottage of George IV. It was formerly fourteen miles in circuit, but has lately been much enlarged. The gardens are spacious and elegant. Windsor forest, fifty-six miles in circuit, was originally formed for the exercise of the chase, a favourite amusement of many of the English sovereigns. Windsor sends two members to parliament. Population in 1831, 7103. *Old Windsor* is the name of a village two miles from New Windsor.

WINDSOR CASTLE was originally built by William the Conqueror, in the eleventh century, and has been the favourite country residence of the English kings for upwards of 700 years. It stands on a high hill, and commands a beautiful view of the Thames and the surrounding counties. Edward III. rebuilt the old castle, and added St George's chapel; and numerous changes were made by succeeding sovereigns, particularly by Charles II. In 1824, the dilapidated condition of the castle attracted the attention of parliament, and a grant of £300,000 was made for restoring it. Further grants, amounting in all to about £800,000, have since been required, and the whole appearance of the building has been much improved by increasing the height of the walls, inserting larger windows, &c. The castle is divided into two wards, the Upper and the Lower, with a round tower between them, called the Middle ward; the whole covering about twelve acres, and forming a hollow square, three of the outer sides of which are surrounded by a magnificent terrace. The inner court is a connected building of three sides, the fourth being formed by the Round tower, or keep. The Lower ward contains the ecclesiastical portions of the edifice, including St George's chapel. The Upper ward is formed by the round tower on the west, the state apartments, including St George's hall, on the north, and a range of domestic apartments on the east and north, communicating with the state apartments. The royal apartments on the north side of the upper court are termed the Star-building, from a star and garter in the middle of the structure. Amongst those shown to the public are the king and queen's guard-chambers, containing a fine armoury; the queen's presence-chamber, hung with tapestry representing the decapitation of St Paul; the ball-room, with tapestry depicting the months of the year; the queen's bed-chamber, in which is a state bed; the beauty-room, so called from the portraits of Charles II.'s beauties, with which it is decorated; the king's dining-room; the king's audience-chamber, embellished with paintings by West; the king's or St George's chapel, adorned with paintings by Verrio, and carving by Gibbon; and St George's hall, appropriated to the order of the garter, and containing a representation of the triumph of the Black Prince. St George's chapel, or the collegiate church of Windsor, is the largest and most elegant of the three royal chapels in England. It was founded by Edward III. but much improved by Edward IV., and afterwards by Henry VII. The interior is built in the form of an ellipsis, and the roof is supported by lofty pillars. On each side of the choir are the stalls of the sovereign and knights of the order of the garter, with their arms, banners, &c.; and in the vaults beneath are interred Henry VI., Edward IV., Henry VIII., his queen Jane Seymour, Charles I., and a daughter of queen Anne. At the east end of St George's chapel is a royal mausoleum, formerly called Wolsey's tomb-house, from that cardinal having begun a sumptuous monument here for himself. The monument was left unfinished, and the building fell to decay, till George III. formed it into a mausoleum. The remains of George III. and his wife, of his sons, George IV., William IV., the duke of York and the duke of Kent, and of the princess Charlotte, with her infant son, are deposited here. Among the recent improvements before alluded to, are the new gateway, called George the Fourth's, consisting of two towers, York and Lancaster, 100 feet high; the Octagon tower, which is higher than any other part of the building, being 120 feet above the level of the terrace; a fine gallery, connecting the Octagon tower with the Star-building, &c.

WINDSOR, the capital of Hants county, Nova Scotia, is situated on the Avon and the St Croix, just above their junction, forty-five miles north of Halifax. After the Avon receives the St Croix, it spreads into a wide frith, and afterwards flows into the basin of Minas. The rise of the Avon at Windsor is twenty feet at neap tides, and thirty at spring tides. The river at low water is only a brook. Windsor has a fine situation, and contains some of the best land in the province. Its principal commercial business arises from its gypsum. This is carried, in great quantities, to St John's, in New Brunswick, to be shipped thence to the United States. In 1828, Windsor contained a university, an academy, a court-house, a jail, and houses of worship for Episcopalians, Roman Catholics, Methodists, Presbyterians and Baptists; and 2065 inhabitants.

WINDSOR; a post-town of Windsor county, Vermont, situated on the west bank of the Connecticut, eighteen miles south of Dartmouth college. Population in 1820, 2956; in 1830, 3134.

WINDWARD ISLANDS; one of the divisions of the Caribbean islands, so called in opposition to another division of the same, called the *Leeward* islands. The Windward islands are Martinique, St Lucia, St Vincent, Grenada, Barbadoes and Tobago. The name is, however, differently applied by different writers.

WINDWARD PASSAGE; a name given to a course from the south-east angle of the island of Jamaica, extending 160 leagues, to the north side of Crooked island, in the Bahamas.

WINE; liquor that has become spirituous by fermentation. The invention of wine is involved in the obscurity of fable; but it must be referred to very remote times. The first portion of the fruit of the vine which had been pressed by accident or design, and allowed to remain a short time undisturbed, would be found to have assumed new and surprising properties; and the method of preserving for constant use the beverage thus obtained would soon be learned. The Egyptians attributed the invention to Osiris, the Greeks to Bacchus, and the Latins to Saturn. Wine was in common use, from an early period, among the Hebrews; but the use of it was, for a long time, forbidden in Rome, and, even at a later period, was not allowed to women. The Greeks and Romans poured out libations to the gods upon the ground or table; and the custom of drinking to the health of distinguished persons, or absent friends, also prevailed in both nations. See *Feasts of the Ancients*.

The vine does not thrive except between 35° and 50° of latitude; in higher latitudes, the grape seldom arrives at maturity, and the wine is weak, liable to sour, and destitute of the generous flavour which characterizes that produced in more favourable regions. In warmer climates, the saccharine matter predominates, and a complete decomposition cannot be effected.

The grape in some countries is cut off the plant with a knife; in France, the scissors is used, by which the stems of the branches are rapidly severed. In ruder countries, the hand only is applied, a mode injurious to the grape as well as to the vine. The most approved plan is to make three separate gatherings of the fruit. The *first* includes all the finest and ripest bunches. The green, rotten grapes, or such as have been eaten into by insects, are cleared from the bunches, which are then carefully carried home. The *second* gathering implies naturally a second pressing. The grapes are not quite as ripe as the first. The *last* gathering and pressing consists of the inferior grapes. The gathered bunches are deposited as lightly as possible, to prevent the grapes from being bruised. All dry or spoiled grapes are cast aside, where proper care is used, as fine or delicate wine is intended to be made. Each labourer places his gathering in an ozier basket, or in a sort of wooden dosser, carried with the least possible motion. In France, in the department of the Marne, the grapes are carried on horseback covered with cloths. The grapes in some countries are plucked from the bunches; in others, they are placed entire in the press, stems and all. The best grapes only are used for making the better kinds of wine. The astringent principle lodged in the stems is thought to be beneficial, and to impart to the wine a capacity of endurance or long keeping. When picked, it is only for red wine, and is generally done by the hand. White-wine grapes are rarely picked from the clusters.

Grapes were anciently trodden out, after being exposed on a level floor, to the action of the solar rays for ten days; they were then placed in the shade for five days more, in order to mature the saccharine matter. This practice is still followed in some of the islands of the Greek Archipelago, at St Lucar, in Spain, in Italy, at least in Calabria, and in some of the north-eastern departments of France. The fermentation is facilitated greatly by this process. In some parts of France, a labourer with sabots treads the grapes out as they come from the vineyard in a square box, having holes in the bottom and placed over a vat—a very barbarous method. The murk is then removed, and he proceeds with fresh grapes till the vat is full. Sometimes they are squeezed out in troughs, by naked men, using both sabots and hands at once.

The wine press differs in construction in different countries. There are several kinds. For red wine, the grapes are trodden before they are pressed, in order to disengage the colouring matter from the skins; but in making white wine, this operation is never performed. In either case, where the press is applied, the first pressing is dispatched as quickly as possible. At first the press is used gently, that the wine may not overflow. The pressure is then gradually increased, until the murk becomes moderately compressed. This is the first pressing. The grapes that did not sustain pressure, being scattered over the edges of the heap, are now gathered up, the press relaxed, and being placed upon the murk, the press is tightened again. The wine from this is called of the second pressing. The edges of the whole mass are now squared down with a cutting instrument, so that the mass of fruit is reduced to the form of an immense oblong cake, upon which the cuttings of the edges are heaped, and the press worked again, which makes wine of the third pressing, or, as the wine-maker calls it, *wine of the first cutting*. The pressing and cutting are repeated two or three times, and what liquid flows after is called among the labourers wine of the second or third cuttings. There is only one species of wine which is made without beating, treading, or pressing; this is what they call in Spain *lagrima*. The grapes, melting with ripeness, are suspended in bunches, and the wine is the product of the droppings. This can only be effected with the *muscatel* grape of the warm south. In this way the richest Malaga is made. In Cyprus the grapes are beaten with mallets, on an inclined plane, with a reservoir at the end.

The juice of the grape, when newly expressed, and before it has begun to ferment, is called must, and, in common language, *sweet wine*. It is turbid, has an agreeable and very saccharine taste, and is very laxative. When the must is pressed from the grapes, and put into a proper vessel and place, with a temperature of between 55° and 60°, a gradual fermentation ensues. Bubbles of carbonic acid gas (fixed air) rise to the surface, bringing along with them the skins, stones, and other grosser matters of the grapes, and which form a scum, or soft spongy crust, that covers the whole liquor. After a time, the crust becomes stiff, is broken in pieces by the ascending gas, and falls to the bottom of the liquor. When this takes place, if we would secure a good and generous wine, all sensible fermentation must be checked. This is done by putting the wine into close vessels, and carrying these into a cellar or other cool place. The wine produced by this first fermentation differs entirely and essentially from the juice of grapes before fermentation. Its sweet and saccharine taste is changed into one that is very different, though still agreeable and somewhat spirituous. It has not the laxative quality of must, but affects the head, and, if taken immoderately, occasions drunkenness; and, when distilled, it yields, instead of the insipid water obtained from must, genuine alcohol. When any liquor undergoes the spirituous fermentation, all its parts seem not to ferment at the same time, otherwise the fermentation would probably be very quickly completed, and the appearances would be much more striking; hence, in a liquor much disposed to fermentation, this motion is more quick and simultaneous than in another liquor less disposed.

perience has shown that a wine, the fermentation of which is very slow, is never good, and, therefore, when the weather is too cold, the fermentation is accelerated by heating the place in which the wine is made. A too hasty and violent fermentation is also hurtful, from the dissipation and loss of some of the spirit. However, we may distinguish, in the ordinary method of making wines of grapes, two periods in the fermentation, the first of which lasts during the appearance of the sensible effects above alluded to, in which the greatest number of fermentable particles ferment. After this first effort of fermentation, these effects sensibly diminish, and ought to be stopped for reasons hereafter to be mentioned. The fermentative motion of the liquor then ceases. The heterogeneous parts, that were suspended in the wines by this motion, and render it muddy, are separated, and form a sediment called *lees*, after which the wine becomes clear. But though the operation is then considered as finished, and the fermentation apparently ceases, it does not really cease; and it ought to be continued in some degree if we would have good wine. In this new wine, a part of the liquor probably remains that has not fermented, and which afterwards ferments, but so very slowly, that none of the sensible effects produced in the first fermentation are here perceived. The fermentation, therefore, still continues in the wine, during a longer or shorter time, although in an imperceptible manner; and this is the second period of the spirituous fermentation, which may be called the impereeptible fermentation. The effects of this fermentation are the gradual increase of the quantity of alcohol, and of the separation of the acid salt, called *tartar*, from the wine. As the taste of tartar is harsh and disagreeable, it is evident that the wine, which, by means of the insensible fermentation, has acquired more alcohol, and has disengaged itself of the greater part of its tartar, ought to be much better and more agreeable; and for this reason chiefly old wines are universally better than new. But insensible fermentation can only ripen and meliorate the wine if the sensible fermentation have regularly proceeded, and been stopped in due time. We know certainly that, if a sufficient time have not been allowed for the first period of the fermentation, the unfermented matter that remains, being in too large a quantity, will then ferment in the bottles, or close vessels, in which the wine is put, and will occasion effects so much more sensible as the first fermentation shall have been sooner interrupted; hence these wines are always turbid, emit bubbles, and sometimes break the containing vessels, from the large quantities of air disengaged during the fermentation. We have an instance of these effects in the wine of Champagne, and in others of the same kind: the sensible fermentation of which is interrupted, or rather suppressed, that they may have this sparkling quality. It is well known that these wines make the corks fly out of the bottles; that they sparkle and froth when they are poured into glasses; and lastly, that they have a taste much more lively and piquant than wines that do not sparkle; but this sparkling quality, and all the effects depending on it, are only caused by a considerable quantity of carbonic acid gas, which is disengaged during the confined fermentation that the wine has undergone in close vessels. This air, not having an opportunity of escaping, and of being dissipated as fast as it is disengaged, and being interposed betwixt all the parts of the wine, combines, in some measure, with them, and adheres in the same manner as it does to certain mineral waters, in which it produces nearly the same effects. When this air is entirely disengaged from these wines, they no longer sparkle, but lose their brisk taste, and become insipid. Such are the qualities which wine acquires, in time, when its first fermentation has not continued sufficiently long. These qualities are given purposely to certain wines to indulge taste or caprice; but they are not regarded as suited to daily use. Wines for daily use ought to have undergone so completely the sensible fermentation, that the succeeding fermentation shall be insensible, or, at least, very nearly so. Wine, in which the first fermentation has been too far advanced, is liable to worse inconveniences than that in which the first fermentation has been too quickly suppressed; for every fermentable liquor is, from its nature, in a continual intestine motion, more or less strong, according to circumstances, from the first instant of the spirituous fermentation, till it is completely purified; hence from the time of the completion of the spirituous fermentation, or even before, the wine begins to undergo the acid or acetous fermentation. This acid fermentation is very slow and insensible, when the wine is included in very close vessels and in a cool place; but it gradually advances, so that in a certain time the wine becomes completely sour. This evil cannot be remedied, because the fermentation may advance, but cannot be reverted. Wine merchants, therefore, when their wines become sour, can only conceal or remove this acidity by alkalies or alkaline earths. But these additions communicate to wine a dark, greenish colour, and a taste which, though not acid, is somewhat disagreeable. Besides, calcareous earths accelerate, considerably, the total destruction and putrefaction of the wine. Oxides of lead, having the property of forming with the acid of vinegar, a salt of an agreeable saccharine taste, which does not alter the colour of the wine, and which, besides, has the advantage of stopping fermentation and putrefaction, might be employed to remedy the acidity of wine, if lead and all its preparations were not pernicious to health, as they occasion most terrible colics, and even death, when taken internally. If wine contain oxide of lead, it may be discovered by transmitting through a portion of it, in a wine-glass, a current of sulphureted hydrogen gas, which will cause a glistening, black precipitate of sulphuret of lead. See *Fermentation*, and *Vinegar*.

When the wine has attained a sufficient degree of maturity, it is freed from the lees, by being *racked*, as it is termed, into a clean cask; and, in order to prevent a renewal of the fermentation, it is subjected to the operation of sulphuring. This process is generally performed by means of sulphur matches, applied to the cask into which the wine is to be racked, and should the fermentation still continue, must be renewed as often as is necessary. Sometimes must, strongly impregnated with sulphurous acid gas, is added to the wine, and answers the same purpose. After sulphuring, the greater proportion of wines require to be further clarified, or fined, before they attain a due brightness. For this purpose, various substances are used, which, by their chemical or mechanical action, unite with such materials as disturb the purity of the wine, and precipitate with them to the bottom. The substances in general use are isinglass and the white of eggs; but, as these are of a putrescent nature, gum Arabic has been used instead of them. In Spain, the white wines are sometimes clarified with fuller's earth: powdered marble, gypsum, heated flints, beech-wood chips, sand, &c., are also used.

When the wine has thus been prepared, it is almost always *medicated*, as it is called, before it is ready for the market; and very little wine is, in fact, a simple or natural liquor. One of the most common processes of medication is mixing different wines together, sometimes of the same quality or country, but often of different ones. For this purpose, that season is chosen in which the wines show a disposition to renew their fermentation. They are then said to *bear the fret;* and the operation is called *fretting-in.* The mixing different wines always disturbs both, so that they tend to ferment again; and when the fermentation is determined, they form a proper compound. In the wine countries, particular grapes (rough, or coloured, or astringent, or high-flavoured) are cultivated for the mere purpose of mixing their juice with that of others. Another process is that of mixing brandy with the natural liquor. The tendency of this substance, thus mixed, is to decompose the wines in process of time, causing the extractive matter, or mucilage, to be deposited, as well as the colour, and, at the same time, to destroy their lightness and flavour. Few wines naturally possess much flavour; and the same is true, to a great degree, of colour. It is therefore a part of the business of the manufacturer to communicate, artificially, such a flavour and colour as the taste of the customer demands. This result is obtained in various ways, some of which continue a secret. The flavour, however, is often generated by the application of bitter almonds, oak chips, orris-root, wormwood, rose-water, &c., while colour is produced by the use of dye-woods, logwood, &c., berries, oak chips, burnt sugar, iron, &c. Both processes require to be managed with great delicacy and skill.

Wines are red, when the black grape, with its skin, has been used, and of more or less yellowish-white colour, when the white grape, or even when the black grape, freed of its skin, has been employed. Wines, with respect to their properties, may be divided into three principal divisions, viz., 1. the *astringent* or *dry wines;* such are those of Alicant, Bordeaux, Burgundy, Sherry, Madeira, &c. These wines contain a small quantity of tannin, which gives them a taste more or less harsh. 2. The *sweet wines*, such are Malaga, Rota, Rivesaltes, Lunel, &c., containing a tolerably large quantity of sugar, which has escaped fermentation. And, 3. the *foaming* or *sparkling wines*, such as champagne, which, being bottled up before they have undergone a perfect fermentation, contain a large quantity of carbonic acid gas in solution. All the wines give, on analysis, very nearly the same products, viz. water, alcohol, a little mucilage, colouring principles, supertartrate of potassa, tartrate of lime, acetic acid; and some of them contain, besides, carbonic acid; finally, a very volatile principle, which has not as yet been isolated, and to which the peculiar flavour or *bouquet* of the wine has been attributed. To the presence of alcohol they are principally indebted for their stimulant and diffusible properties; and this principle, which may be separated by distillation, exists in them in very different proportions, as may be perceived by the following table, drawn up by Mr Brande:—

Names of the Wines, Malt and Spirituous Liquors, and the Proportion of Alcohol (specific gravity 0·825) in one hundred Parts of these Liquids by Measure.

Lissa (average)	25·41
Marsala (average)	25·09
Port (average)	22·96
Madeira, and red or Burgundy Madeira (average)	22·27
Xeres or Sherry (average)	19·17
Teneriffe	19·79
Lachryma Christi	19·70
Constantia (white)	19·75
Ditto (red)	18·92
Lisbon	18·94
Cape Muscat	18·25
Roussillon (average)	19·13
Malaga	17·26
Hermitage (white)	17·43
Malmsey Madeira	16·40
Lunel	15·52
Bordeaux wine or claret (average)	15·10
Sauterne	14·22
Burgundy (average)	14·57
Nice	14·63
Champagne (still)	13·80
Ditto (sparkling)	12·61
Red Hermitage	12·32
Vin de Grave	13·37
Frontignac	12·79
Cote rotie	12·32
Rhenish wine (average)	12·08
Tokay	9·88
Gooseberry wine	11·84
Cider (highest average)	9·87
Ditto (lowest ditto)	5·21
Mead	7·32
Ale (average)	6·87
Brown stout	6·80
Porter (average)	4·20
Small beer	1·28
Brandy	53·39
Rum	53·68
Gin	51·60
Whiskey	54·32
Irish ditto	53·90*

The action of wines upon the animal economy depends principally upon the quantity of alcohol they contain. However, a certain given quantity of wine does not act in the same way as a mixture of alcohol and water in the same proportions; and certain wines, yielding on distillation very nearly the same proportion of alcohol, do not inebriate with the same facility. This difference must be ascribed to the various kinds of combinations in which alcohol exists in these complex products. Astringent wines act as tonics and stimulants; and the sparkling wines, which act so promptly and so powerfully on the brain, notwithstanding the small proportion of alcohol they contain, exercise likewise a very decided diuretic influence.

In regard to the dietetic or medical qualities of the different sorts of wines, we copy the following observations from Henderson's valuable work (History of Wines, quarto, 1824), from which we have borrowed largely in compiling this article. "Among the brisk wines, champagne may be considered the best, and is the least noxious, even when drunk in considerable quantity. The wines of

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* Upon this subject Henderson remarks, that some of the wines analysed by Brande, were mixed with a considerable quantity of adventitious alcohol, and furnishes the following additions and corrections:—

Lissa	15·90
Claret	12·91
Constantia	14·50
Marsala	19·40
Rhenish	7·26
Johannisberger	8·71
Rudesheimer (1811)	10·72
Ditto (1800)	12·23

Many of these wines are, indeed, artificially compounded; but it is their artificial strength that it is most desirable to understand, because they are rarely found in a natural state. It should be also observed that much of the wine here analysed is brandied expressly for the taste of the British market, where, as observed, we rarely receive it in a purer condition.

Champagne intoxicate speedily, probably in consequence of the carbonic acid in which they abound, and the volatile state in which their alcohol is held; and the excitement is of a more lively and agreeable character, and shorter duration, than that which is caused by any other species of wine, and the subsequent exhaustion less. Hence the moderate use of such wines has been found, occasionally, to assist the cure of hypochondriacal affections and other nervous diseases, where the application of an active and diffusible stimulus was indicated. The opinion which prevails that they are apt to occasion the gout, seems to be contradicted by the infrequency of that disorder in the province where they are made; but they are generally admitted to be prejudicial to those habits in which that disorder is already formed, especially if it has originated from addiction to stronger liquors. With respect to this class of wines, however, it is to be observed that they are drunk too often in a raw state, when, of course, they must prove least wholesome; and that, in consequence of the want of proper cellars, and other causes which accelerate their consumption, they are very rarely kept long enough to attain their perfect maturity. It is also worthy of notice, that, in order to preserve their sweetness, and promote effervescence, the manufacturers of champagne commonly add to each bottle a portion of sirup, composed of sugar-candy and cream of tartar, the highly frothing kinds receiving the largest quantity. Therefore, contrary to the prevailing opinion, "when the wine sparkleth in the glass, and moveth itself aright," it is most to be avoided, unless the attributes of age should countervail all its noxious properties. 2. The red wines of Burgundy are distinguished by greater spirituosity, and a powerful aroma. Owing, perhaps, to the predominance of the latter principle, they are much more heating than many other wines which contain a larger proportion of alcohol. The exhilaration, however, which they cause, is more innocent than that resulting from the use of heavier wines. The better sorts may be sometimes administered with advantage in disorders in which stimulant and subastringent tonics are required. The same observation will apply to the wines of the Rhone, and the lighter red wines of Spain and Portugal. 3. Possessing less aroma and spirit, but more astringency, than the produce of the Burgundy vineyards, the growths of the Bordelais are perhaps, of all kinds, the safest for daily use, as they rank among the most perfect light wines, and do not excite intoxication so readily as most others. They have, indeed, been condemned by some writers as productive of gout, but, I apprehend, without much reason. That with those people who are in the practice of soaking large quantities of Port and Madeira, an occasional debauch in claret may bring on a gouty paroxysm, is very possible; but the effect is to be ascribed chiefly to the transition from a strong brandied wine to a lighter beverage—a transition almost always followed by a greater or less derangement of the digestive organs. Besides, we must recollect, that the liquor which passes under the denomination of claret is generally a compounded wine. It is therefore unfair to impute to the wines of the Bordelais those mischiefs which, if they do arise in the manner alleged, are probably, in most instances, occasioned by the admixture of other vintages of less wholesome quality. 4. The wines of Oporto, which abound in the astringent principle, and derive additional potency from the brandy* added to them previously to exportation, may be serviceable in disorders of the alimentary canal, where gentle tonics are required. But the gallic acid renders them unfit for weak stomachs; and what astringent virtues they show will be found in greater perfection in the wines of Alicant and Rota, which contain more tannin and less acid. The excitement they induce is of a more sluggish nature than that attending the use of the purer French wines, and does not enliven the fancy in the same degree. As a frequent beverage, they are unquestionably much more pernicious. 5. For a long time, the vintages of Spain, and particularly the sacks, properly so called (see *Sack*), were preferred to all others for medicinal purposes. The wines of Xeres (Sherry) still recommend themselves by the almost total absence of acidity. 6. Of all the strong wines, however, those of Madeira, when of good quality, seem the best adapted to invalids; being equally spirituous as Sherry, but possessing a more delicate flavour and aroma, and, though often slightly acidulous, agreeing better with dyspeptic habits. Some have thought them beneficial in cases of atonic gout, probably without much cause; for whenever a disposition to inflammatory disorders exists, the utility of any sort of fermented liquors is very doubtful. 7. The light wines of the Rhine, and those of the Moselle, are much more refrigerant than any of the preceding, and are frequently prescribed, in the countries where they grow, with a view to their diuretic properties. In certain species of fever, accompanied by a low pulse and great nervous exhaustion, they have been found to possess considerable efficacy, and may be given with more safety than most other kinds; as the proportion of alcohol in them is small, and its effects are moderated by the presence of free acids. They are also said to be of service in diminishing obesity. 8. It is difficult to conjecture on what circumstances the ancients founded their belief in the innocuous qualities of sweet wines, contrasted with the drier and more fully fermented kinds. They may not intoxicate so speedily, and, as they cloy sooner upon the palate, are perhaps generally drunk in greater moderation. When new, they are exceedingly apt to disorder the stomach; and when used too freely, they produce all the same effects as the heavier dry wines. In their more perfect state, they may answer the purpose of agreeable and useful cordials; but, as the excess of saccharine matter retards their stimulant operation, they ought always to be taken in small quantities at a time."

Wines, Ancient and Modern. Our limits will only permit us to touch upon this part of the subject. Among the Greeks and Romans, the sweet wines were those most commonly in use; and, in preparing their wines, the ancients often inspissated them until they became of the consistence of honey, or even thicker. These were diluted with water previously to their being drank; and, indeed, the habit of mixing wine with water seems to have prevailed much more in antiquity than in modern times. Among the principal Greek wines, the Maronean and Ismarian were of Thracian growth; the Pramnian, of uncertain growth, was a strong, hard, astringent liquor, resembling Port; but the luscious sweet wines are the favourite topics of the Grecian drinking songs. They were chiefly the products of the Ionian and Ægean isles. The Chian was famous for its exquisite aroma, the Lesbian for its delicious flavour, and the Thasian was a generous sweet wine, acquiring by age a delicate odour of the apple. The Ariusian or Arivisian, and the Phanean, called by Virgil the king of wines, were products of Chios. Besides these and other indigenous growths, several African and Asiatic wines enjoyed a high reputation among the Greeks. The Bithynian wines were of the choicest quality: the wines of Byblos, in Phœnicia, vied in fragrancy with the Lesbian: the white wines of Mareotis and Tænia, in Egypt, were also famous for their delicate perfume. The finest wines used by the Romans were the produce of Campania (q. v.), which formed one continued vineyard. The Cecuban was a generous, light wine, but apt to affect the head, and ripening only after a long term of years. The Falernian, according to Henderson, was a strong, durable wine, being, when new, rough, harsh and fiery, and requiring to be kept a long time, before it attained a due degree of mellowness. The Setina was a delicate, light wine, the favourite of Augustus, but not even mentioned by Horace, who had a decided predilection for the strong wines. The Massican appears to have been a species of Falernian. The Calenum, Caulinum and Statanum were also highly prized by the Romans. The Albanian, when properly matured, was an excellent dry wine. Among the lighter growths of the Roman territory, the Sabine, Nomentan, Venafran and Spoletan were among the most agreeable. The Mamertine, a light and slightly astringent wine, and the Pollian, a sweet wine, were among the growths of Sicily. Spanish and Gallic wines were also used by the Romans, as well as the eastern growths. The richer wines were reserved by the ancients for the dessert; and among the Greeks the most esteemed dessert wines were the Thasian and Lesbian; among the Romans, the Cecuban, Albanian and Falernian of native growths, and, when they had become acquainted with the products of foreign countries, the Chian and Lesbian. Of the principal modern wines we have already spoken at considerable length under the separate heads. (See *Burgundy*, *Bordelais*, *Champagne*, *Rhenish*, *Moselle*, *Hungarian*, *Sherry*, *Port*, &c.) Madeira, so called from the island which produces it, is much used in this country. There is a great difference in the flavour and other qualities of the Madeira wines: the best are produced on the south side of the island: they may be kept for a very long period, and, as is well known, are often sent long voyages in warm climates, to mellow them. They are naturally very strong, but commonly receive an addition of brandy when racked off. The Madeira wines retain their qualities unimpaired in both extremes of climate, suffering no decay, and constantly improving as they advance in age. Indeed, they are not in condition until they have been kept for ten years in wood, and afterwards allowed to mellow nearly twice that time in bottle; and even then they will hardly have reached the utmost perfection of which they are susceptible. When of good quality, and matured as above described, they lose all their original harshness, and acquire that agreeable pungency, that bitter sweetishness, which was so highly prized in the choicest wines of antiquity, uniting great strength and richness of flavour with an exceedingly fragrant and diffusible aroma. The nutty taste, which is often very marked, is not communicated, as some have imagined, by means of bitter almonds, but is inherent in the wine.

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* These remarks are more particularly applicable to the Port intended for the British market.

WING. The wings of birds correspond to t
fore legs of quadrupeds and the arms of man. T
clavicle of birds is a hollow tube of great streng
and the fork is peculiar to winged animals. T
different bones of the wing are bound together, a
connected with the bones of the body, by stro
ligaments; and the muscles by which motion
communicated to them are the most powerful wi
which the animal is provided. All this pecul
apparatus is necessary to give due force to the
instruments of locomotion. The construction a
disposition of the feathers are not less curious, a
admirably adapted for the purpose of flying. (S
Feather, and *Ornithology*, for many details on t
subject.) The best form of windmill sails, wh
human ingenuity and science have been able to d
vise, bears a striking resemblance to the arrang
ment of the feathers in the wings of birds, and
one of many beautiful instances of the mathem
cal exactness of the principles on which the wor
of creation are constructed. The form of th
wings is most accurately adapted to the habits
the birds. There are two forms, which have r
ceived the names of the *rudder-formed* and the sa
formed wings: the former are long, slim and tape
ing, as in the falcons, swallows, &c.; the la
broad, long, and rounded at the end, as in the sw
goose, &c. The former are for quick, sudden a
rapid motion, and are moved often; the latter f
floating a long time more slowly through the air.
The wings of insects are membranous, elastic, a
the most part transparent, and traversed by in
air-vessels, which sometimes form a beautiful ne
work. In some they are naked; in others, a
the butterflies, they are covered with fine, su
feathery scales: in some they are extended a
straight; in others folded. Some insects have fo
wings, and others but two: the latter are commonl
provided with poisers or balancers (*halteres*). T
difference in the structure and disposition of t
wings is one of the distinctive marks on which th
division of insects into orders is founded: thus w
have the *hemiptera*, the *coleoptera*, the *lepidopter*
the *neuroptera*, &c. (See *Insects*, and *Entomology*.
—Quadrupeds which fly are provided with mem
branes extending over the bones of the extremitie
by which they are enabled to impel themselve
through the air (see *Bat*); others merely have th
skin so loose on the sides as to be spread out whe
the limbs are extended; and, being buoyed up
this manner, they are able to make surprising lea
(See *Squirrel*.)—The desire of flying seems to ha
haunted men from the earliest times, and has give
rise to many attempts to accomplish this object b
means of artificial wings. The fable of Dædal
and Icarus shows how old this idea is; and ma
attempts have been made, in modern times, to car
it into execution, but without success. Degen, a
ingenious watch-maker of Vienne, succeeded
sustaining himself in the air by means of artific
wings; and he went to Paris, in 1813, to exhib
his accomplishment; but he failed entirely in o
taining any command over them. Borelli (*D*
Motu Animalium, Rome, 1680) has fully demo
strated, from a comparison of the muscles of m
with those of birds, that artificial wings attached
the human body, could not be employed for this pu
pose. It is by no means impossible, however, th
they might be applied to produce motion throug
the air, by being connected with some sort of ca
and set in motion by steam.

WINGED in botany; a term applied to su stems of plants as are furnished, all their length, with a sort of membranaceous leaves, as the thistle, &c.—Winged leaves are such as consist of divers single leaves ranged in the same direction, so as to appear only as the same leaf. Such are the leaves of agrimony, acacia, ash, &c.—Winged seeds are such as have down or hairs on them, which, by the help of the wind, are carried to a distance.

WINGS, in military affairs, are the two flanks or extremes of an army, ranged in order of battle.—*Wings*, in fortification, denote the longer sides of horn-works, crown-works, tenailles, and the light out-works, including the ramparts and parapets, with which they are bounded on the right and left from their gorge to their front.

WINGOLF. See *Northern Mythology*.

WINKELRIED, ARNOLD VON; a knight of the Swiss canton of Underwalden, who, in the battle of Sempach, July 9, 1386, by the sacrifice of his life, enabled his countrymen to defeat the troops of Leopold, duke of Austria. The long lances of the latter frustrated the efforts of the Swiss to break their ranks. Many of the Swiss had already fallen, when Arnold von Winkelried called out to his comrades, "I will make a lane for you: faithful dear confederates, think of my family,"—then exclaiming, "Make way for Liberty!" he rushed on the enemy, grasped several lances, and, heedless of the thrusts, bore them to the ground. His countrymen followed through the opening which he had made, and won the battle of Sempach. The Swiss, on the anniversary of this day, celebrate a national festival, in honour of Winkelried, and those who fell with him. See Müller's *History of Switzerland*.

WINKLER, JOHN HENRY, the son of a miller in Lusatia, was born in 1703, studied at the university of Leipsic, from 1731 to 1739, was a teacher in a school in that city, in 1737, delivered lectures on experimental philosophy, natural theology, &c., and was afterwards appointed professor of philosophy in the university. In 1741—1745, he published a work on the souls of animals. In 1742, he was appointed professor of Greek and Latin, and published some philological works. He subsequently exchanged this professorship for that of natural philosophy, and published various works in this branch. Winkler and Hausen, professor of mathematics in Leipsic, did much to make the properties of electricity known in Germany, after public attention had been directed to the subject in England and France, about 1740, by William Gilbert. Winkler improved the electrical machines; and his Inquiries into Electricity were translated into English. He was chosen a member of the royal society, and was the first person in Germany who suggested the use of lightning-rods, in his dissertation *De avertendi Fulminis Artificio ex Doctrina Electricitatis* (1753), in which he alludes to Franklin's discoveries. He died in 1770.

WINNIPECK, OR WINNIPEG; a lake of North America, 240 miles long, and from 5 to 60 in breadth; lon. 95° 48′ to 99° 12′ west; lat. [illegible] 22′ to 53° 57′ north. It communicates on the west side, with Little Winnipeck lake, by Dauphin river, St Martin's lake, and Wetarhen river. On the south side, it receives the Assiniboin or Red river; and on the south-west it receives Winnipeck river. At this point the British fur companies have forts. The country around the lake is low, covered with timber, and the soil is pretty good. Wild rice grows in abundance.

WINNIPISEOGEE; a lake of America, in New Hampshire, east of the centre; lon. 71° 5′ to 71° 25′ west; lat. 43° 29′ to 43 44′ north. It is twenty-three miles long, and ten broad. It receives several small streams, and its waters are conveyed off by Winnipiseogee river, which joins the western branch of the Merrimack at Sanborton, opposite Salisbury. This lake is 472 feet above the ocean, and 232 above Merrimack river. It is very deep, and in some parts is unfathomable by any means possessed by the inhabitants. Its waters are very pure, and abound with fish. Its form is very irregular, and it contains 365 islands. Some of these are large enough for extensive farms. The scenery connected with this lake is said to be superior to any thing else of the kind in the United States. A pleasing description of it has been given by doctor Dwight in his Travels.

WINTER (from wind, on account of the prevalence of storms at this season; so with the Greeks χειμων from χειν, to pour, and with the Romans, *hyems*, from ὑειν, to rain, because in the more southern climates of the northern hemisphere it is a rainy season); the coldest season of the year, which begins astronomically on the shortest day (December 22), and ends with the vernal equinox (March 21). In the southern hemisphere, it is of course winter when it is summer with us. (See *Summer*.) In our hemisphere, the winter is but eighty-nine days, while, in the southern hemisphere, it is ninety-three days; our winter occurring during the earth's parhelion, and the winter of the southern hemisphere during its aphelion, when its motion in its orbit is slower. (See *Seasons*.) The coldness of winter is owing, therefore, to the shortness of the days, or time during which the sun is above the horizon, and the oblique direction in which his rays fall upon our part of the globe at that season. In the torrid zone, there is no winter, in our sense of the word; but a rainy season, without ice, snow, or frost, takes its place. (See *Climate* and *Temperature*.) This remark is also true of countries bordering on the tropical regions, to a considerable distance north and south.

WINTER SOLSTICE. See *Solstice*.

WINTER, JOHN WILLIAM DE, vice-admiral, was born in 1750, in Texel. At the age of twelve years, he entered the navy. In 1787, when the revolution broke out in Holland, De Winter was a lieutenant, and embraced with ardour the cause of the patriots; which circumstance obliged him to take refuge in France, when the party of the stadtholder prevailed. In France, he entered the army and served, in 1792 and 1793, under Dumouriez and Pichegru, and soon rose to the rank of general of brigade. In 1795, when Pichegru invaded Holland, De Winter returned to his country, where the states-general offered him the rank of rear-admiral. The year following, he was made vice-admiral and commander of the naval forces at Texel. Having been blockaded here for a long time, he at last succeeded in evading the vigilance of the enemy, and, October 7, 1797, set sail with twenty-nine vessels, of which sixteen were ships of the line. The English fleet consisted of twenty ships of the line, and about fifteen frigates, and other vessels, under Admiral Duncan. The action began October 11, and was maintained about three hours with equal spirit on both sides. De Winter's ship was at last taken, and he was carried on board the vessel of the British admiral. The Dutch lost nine ships of the line, taken or sunk, and about six hundred men killed, and eight hundred wounded. The loss of the British was also severe: some British vessels were sunk. De Winter received in England the honour due to his courage and talents. He was exchanged some months after; and a court-martial declared that he had gloriously sustained the honour of the Batavian republic. In 1798, he was sent, as minister of his republic, to that of France, where he remained in this capacity until 1802, when he received the command of an expedition intended to act against Algiers. He cruised for some months on the Barbary coast, and at last concluded a treaty with Tripoli. Louis Bonaparte, when king of Holland, made De Winter commander-in-chief of all the forces by sea and land. When Holland was united with France, Napoleon made him grand-officer of the legion of honour, and general-superintendent of the coasts of the North sea. In July, 1811, he gave him the command of the forces assembled at the Texel; but the fatigues of his new station ruined his health. He went to Paris, where he died June 2, 1812. His remains were deposited in the Pantheon.

WINTER, Peter von, a distinguished composer of vocal music, was born at Manheim, in 1754, and was the son of a soldier. At the age of ten years, he was appointed a member of the orchestra of the elector. In 1775, he was director of the orchestra at Manheim, and subsequently at Munich. In 1780, he went to Vienna. In 1782, his first opera, Helen and Paris, was performed at Munich. In 1790, he went to Italy, where he was received with great favour. The first opera which he wrote in Italy was Cato in Utica, first performed in Venice in 1791. In 1795 and 1796, he went to Prague and Vienna. At the latter place, he wrote his most celebrated opera, the Sacrifice Interrupted. In 1802, he visited France and England. In Paris, he composed Tamerlane; in London, Calypso, Castor and Pollux, Proserpine and Zaire. He also composed many pieces of church music, among which the requiem for the funeral of Joseph II. is distinguished; also a *Miserere*. Among his profane cantatas, his Timotheus, or the power of Tones, is particularly famous. He died in 1825, at Munich. His operas, oratorios, and other pieces of vocal and instrumental music, are too numerous to be given here.

WINTERBURGER, John, established the first printing-press in Vienna, and cast the types himself. During seventeen years, he worked alone, but subsequently took an assistant. He published numerous editions towards the end of the fifteenth and beginning of the sixteenth centuries; but the copies have become very rare.

WINTERFELDT, Hans Charles von, a general of Frederic the great, was born in 1707, and entered the service in his sixteenth year. Frederic made him a major and his aid-de-camp, after his accession to the throne. In 1740, he was sent to Petersburg to prevent the Russian cabinet from taking part in the first Silesian war. He returned to the army, distinguished himself at Glogau and Mollwitz, and was made colonel. After his victory over the Hungarians at Schlawentiz, April 11, 1745, he was made major-general. He took part in the principal battles of that war. Previous to the third Silesian war, certain papers had been obtained from the archives of Dresden, by the treachery of a clerk. These disclosed the projects of Frederic's enemies; and, in consequence of Winterfeldt's advice, the king anticipated his enemies by the immediate commencement of hostilities. He was subsequently made lieutenant-general, and distinguished himself in many battles in the seven years' war. In September 1757, he was wounded near Görlitz, and died the next morning. His life, by his son, appeared at Leipsic in 1809.

WINTHROP, John, governor of the colony of Massachusetts, was born at Groton, in the county of Suffolk, England, in 1587, and went to Massachusetts in 1630, having been previously chosen governor. He continued to be re-elected, with the intermission of a few years, until his death, in 1649. His Journal contains an accurate account of events in the infant colony, from its foundation to the year of his death. The two first books were published in 1790; but the third, which was for a long time lost, first appeared in the edition of 1825 (Boston, 2 vols., 8vo.), under the care of J. Savage, who has enriched the work with valuable notes. His son, John, born in England, in 1605, and educated at Cambridge, was a fellow of the royal society, and governor of the colony of Connecticut. He was the friend of Boyle, Wilkins, and other learned men, and one of the founders of the royal society, to the Transactions of which he contributed several papers. He died in 1676. A son of the latter, Fitz-John, (born 1638, died 1707), was also governor of Connecticut, and member of the royal society.

WIPPERTHAL, or VALLEY OF THE WIPPER, on the right bank of the Prussian province of Juliers-Cleves-Berg, is one of the most industrious parts of Germany. Since 1816, the population and industry of this valley have much increased. Here Elberfeld, Gemark, Upper and Lower Barmen, Wipperfeld and Rittershausen form an almost uninterrupted town, with beautiful buildings and manufactories, and more than 40,000 inhabitants.

WIRE-DRAWING is the art of drawing out any of the ductile metals into long and regular threads of a uniform diameter, and of any size and shape. (See *Ductility* and *Divisibility*.) The process of wire-drawing is extremely simple, the apparatus employed consisting only of a draw-plate and a draw-bench. The draw-plate is a thick plate of fine steel, perforated with holes of various sizes, from that of the largest to that of the smallest wire required. These holes are punched in the plate, while hot, by well-pointed punches of German steel, and differ in diameter by almost imperceptible gradations. The draw-bench consists of a horizontal roller or axis turned by levers. A strap or chain is coiled round the roller, and at the end of the strap is a pair of pincers for taking hold of the end of the piece of metal to be drawn. The draw-plate being made to bear against the draw-bench, and the levers being turned, the metal is pulled by the pincers through a hole in the draw-plate. It is afterwards drawn successively through smaller holes, being coiled upon the roller as it is drawn out. As the metal becomes stiff and hard by the repetition of this process, it is necessary to anneal it from time to time, to restore its ductility. It is also occasionally immersed in an acid liquid, to loosen the superficial oxide which is formed in the process of annealing.

WIRE OF LAPLAND; a shining, slender substance, made of the sinews of the rein-deer, soaked in water, beat, and spun into a sort of thread, of great strength. The wire, as it is called, is made of the finest of these threads, dipped in melted tin, and drawn through a horn with a hole in it. This wire the Laplanders use in embroidering their clothes.

WIRING. See *Sturdy*.

WIRKSWORTH; a market town in Derbyshire, England, 140 miles north-west by north, from London. The inhabitants derive their chief support from the working of the lead-mines, but some of them are also employed in the manufacture of cotton; and in the immediate vicinity are establishments in which common ginghams are made, and others for the production of hosiery, hats, tape, silk, and for wool-combing. The mines and miners are governed by ancient customs; and all disputes and offences are determined at the Barmote courts, held twice a-year before the steward, in the moot-hall, a handsome stone-building, erected in 1814, by the Hon. Charles Bathurst, late chancellor of the duchy. In this hall is deposited the ancient brass dish, the standard from which those used for measuring the ore are made, which must be brought to be corrected by it, at least twice a-year, by all the miners. The laws and regulations, by which these courts are governed, are very similar to those in force in the mining districts of the duchy of Cornwall; one remarkable custom is, that each person has the privilege of digging and searching for lead-ore in any part of the king's field, which, with a few exceptions, comprehends the whole wapentake: when a miner has discovered a new vein of ore, he has a right to work it and erect buildings necessary for that purpose, without making any compensation to the owner of the land. Population in 1831, 7754.

WIRTEMBERG. See *Würtemberg*.

WISBADEN, or WIESBADEN, a town in the duchy of Nassau, eight miles from Mentz, famous for its baths, is pleasantly situated in a small plain, prettily built, and provided with pleasant promenades. Population 4600. Its springs attract yearly from 3000 to 4000 strangers. Fourteen of them are hot (temperature of the hottest, 151°), and two cold. The duke of Nassau has a castle here, with a library of 27,000 volumes. The Romans were acquainted with the springs of Wisbaden, under the name of *Aquæ Mattiacæ*, or *Mattiaci fontes*; and the remains of works supposed to have been constructed by Drusus are still visible here.

WISBEACH; a market-town and seaport in Cambridgeshire, ninety-four miles north by east from London. Its name is supposed to have been derived from Wise, the ancient name of the river Ouse, and *bec* the Saxon, signifying a situation near the confluence of two rivers. William the Conqueror erected a castle here, which in 1236 was destroyed by an inundation. Another structure was built on the same site some years after by Bishop Morton, and it became the episcopal palace of the bishops of Ely. In the reign of Elizabeth it was used for the confinement of state prisoners, and in the time of the Commonwealth was purchased by Thurloe, Oliver Cromwell's secretary. The town, consisting of several well-built streets, and a handsome cross erected in 1816, on the site of the ancient castle, is situated on the river Nene, which is crossed by a bridge. Here are also a theatre, an assembly-room, a literary society, and two extensive libraries, besides every convenience for salt-water bathing. The trade of the port is very extensive, particularly in corn and butter, besides coals, timber, and wine; and a considerable number of vessels, both British and foreign, are annually cleared from hence; in connexion with the commerce of Wisbeach is a custom-house, a part of which is also used as a town-hall, a corn exchange, and a convenient quay. Population in 1831, 7253.

WISCONSIN. See *Ouisconsin*.

WISDOM, Book of. See *Sirach*.

WISHART, George, one of the first martyrs to the Protestant religion in Scotland, was born in the beginning of the sixteenth century, and appears to have been early distinguished by his attachment to the principles of the reformation, originating, it is said, in his travels to Germany, where he became acquainted with the opinions of Luther. Some accounts assert that he was banished from his own country for teaching the Greek Testament, and that he subsequently resided for some years in the university of Cambridge. In 1544, he returned to Scotland, where he was received with the most ardent good will, and began to preach against the corruptions of the church of Rome, and the vices of the clergy. This conduct exasperated cardinal Beaton, and the priesthood under his influence, and subjected the life of Wishart to more than one attack, until, at last, he was arrested, and, in 1546, put on his trial for obstinate heresy, before a convocation of prelates and clergy, assembled for the purpose in the cathedral. He was found guilty, and condemned to the flames; which sentence was put into execution on the 28th March, in the castle yard of St Andrews, with great pomp and ceremony. Most accounts assert that the cardinal and clergy attended; and so much indignation was apprehended on the part of the people, that the artillery of the castle was pointed towards the place of execution. (See M'Crie's *Life of Knox*. See also Tytler's History of Scotland, where much new light is thrown on the conduct of the early reformers, and on the circumstances which led to the assassination of cardinal Beaton). Wishart is said to have predicted, at the stake, the speedy and violent death of the cardinal; and it is now pretty clearly ascertained, that he spoke less from the inspiration of prophecy than from a secret knowledge of the conspiracy that had already been formed against that dignitary's life.

WISHTONWISH. See *Marmot*.

WISMAR; a town in Mecklenburg-Schwerin, capital of a district, on a bay of the Baltic, opposite to the island of Poel, thirty miles west-south-west of Rostock, thirty-three east of Lübeck; lon. 11° 26′ E.; lat. 53° 55′ N.; population, 10,000. It is surrounded with a wall and moat, has a safe harbour, though not deep enough for large vessels. It has a gymnasium, a public library, three hospitals, three churches, some manufactures of woollens and linens, and considerable shipping trade, particularly in corn. It was formerly a Hanse town. In the beginning of the seventeenth century, it was added to the duchy of Schwerin, and, by the peace of Westphalia, was ceded to Sweden. It has, since then, been repeatedly besieged. In 1803, Wismar, with its territory, was ceded to the duke of Mecklenburg-Schwerin, for the sum of 1,200,000 dollars banco.

WISTAR, Caspar, a distinguished physician, was born in the year 1760. His father was a German, from the Palatinate, who emigrated to America, and settled, as a glass manufacturer, in New Jersey. He belonged to the society of Friends, of which society doctor Wistar remained a member. He was educated at the grammar school, established by William Penn, in Philadelphia, and early determined to pursue the profession of physic. With this view, he entered as a private pupil with doctor John Redman, and attended the lectures then given in the medical school of Philadelphia, which was daily rising in public estimation. In 1782, he received the degree of bachelor of medicine, after passing an uncommonly satisfactory examination; and, in the course of the next year, he left America to pursue his studies in Europe. In 1786, he graduated at Edinburgh with great reputation, and published his thesis *De Animo demisso*. He travelled over a great part of England on foot, examining the mining and manufacturing districts of that country, and whatever else was likely to engage the attention of a man of science. He perambulated Scotland also in the same way. The associations he formed, the friendships he contracted, and the reputation he established wherever he resided, were honourable to himself and his country. The royal medical society of Edinburgh chose him a member. In February, 1787, he returned to Philadelphia, and was appointed, soon after his return, consulting physician to the Philadelphia dispensary, and was one of its early attending physicians. He was further appointed physician to the hospital, and afterwards became adjunct professor to doctor William Shippen, in the departments of anatomy and surgery. As assistant to doctor Shippen, he acquired the practical skill, as a dissector and demonstrator, which laid the foundation of his subsequent reputation. On the decease of doctor Shippen, doctor Wistar was appointed to fill the chair of his departed friend: he had, in fact, long performed the duties of this department. In 1816, he was unanimously elected president of the American philosophical society. Doctor Wistar was too actively engaged to appear often in the character of an author; but his Remarks on the Fever of 1793, his Memoirs on the Ethmoid Bone, and on the Remains of an Animal of the Bos Species, were well calculated to enhance his reputation. His System of Anatomy, (2 vols., Philadelphia, 1812), comprising the heads of his course, is a most useful compend, embracing not merely the anatomy, but the anatomical physiology, of the parts noticed, according to the best views at present known of that branch of the subject. Doctor Wistar was a most active contributor to knowledge of all kinds, by his scientific meetings at his own house, which was the place of resort of all strangers who had information to communicate, as well as of his friends who were engaged in any scientific pursuit. As a professor of anatomy, he was remarkable for the skill and care with which his subjects were prepared and brought forward; the simple, neat, intelligible style of his lectures; the kind and friendly character of his voice and manner; and his anxiety to make his students fully comprehend what they had to learn. He died on January 22, 1818. He was twice married, and, by his second wife, left two children.

WIT is the faculty of detecting, and presenting in a lively manner, similarities in things in which common observers see only diversity. The finding of such similarities presupposes comparison; and wit might therefore be defined a facility in the comparing power to discover unexpected relations, or a playful exercise of the power of comparison. We sometimes apply the name of *wit* to various other sorts of ingenious thoughts expressed in words, in which sense it corresponds to the French *bon mot*. Wit is the more striking, the more easily it brings together things which, to the common observer, appear distinct, and the less obvious the resemblances which it discovers. It is intimately connected with vivacity and quickness of imagination and is much improved by practice. The similarities or differences which wit points out, need not actually exist, but may be merely the creation of the imagination. There must, however, be some ground for the relation presented, though it may be a trifling one, which is called the *point of comparison* (*tertium comparationis*). Dugald Stewart inclines to believe that the pleasure afforded by wit, is founded, to a considerable degree, on the surprise of the hearer at the command which the man of wit has acquired over a part of the constitution so little subject to the will. Hence it is that we are more pleased with a *bon mot* which occurs in conversation, than with one which appears in print; and we never fail to receive disgust from wit, when we suspect it to be premeditated. Doctor Campbell remarks that a witty repartee is infinitely more pleasing than a witty attack, and that an allusion will appear excellent when thrown out extempore in conversation, which would appear execrable in print. Wit is a dangerous power. When employed to attack pedantry, pretension, or folly, not easily assailable in other ways, it is in its proper sphere; but its power may be, and often has been, used to make truth ridiculous. Its influence is most dangerous among those nations whose apprehension is most quick, and whose sensibility is most lively. How important an influence have some *bons mots* exerted in France, false and noxious though they were! Wit has even sometimes taken the place of philosophy in that country but its influence, at present, is much diminished. Wherever it becomes the habitual exercise of the mind, it impairs the nobler powers of the understanding, and chills the feelings. When too much in vogue, it gives a superficial character to the tone of society, and creates a craving for evanescent excitement. The merely witty are seldom popular: they are feared and hated, because they have a weapon which others feel the want of; but when wit is united with superior intellectual powers, and particularly with a kind disposition, it is a most valuable gift, and of very great advantage to public men. Wit is a talent, and therefore natural; but it may be much developed by exercise, and is promoted by general liveliness of conceptions, agreeable social intercourse, and an easy condition in life. It is, at the same time, one of the most difficult talents to manage, as few will abstain from a witty observation from fear of hurting the feelings of others, and departing from the tone of kindness so necessary in good society.

WITCH, WITCHCRAFT. A witch is a person who has acquired supernatural power by entering into a compact with evil spirits. In this sense of the word, the notions of witchcraft are essentially of modern origin, being entirely distinct from the superstitions of the ancients concerning the magical powers of the enchantments of their sorcerers. (See *Magic*.) The term *witch* occurs, indeed, in our version of the Scriptures, according to which, the law of Moses is, "Thou shalt not suffer a witch to live" (*Exodus*, xxii, 18); but, besides that many commentators believe the Hebrew term *charasp*, here translated *witch*, should be rendered *poisoner*, there is nothing to indicate any such infernal league between the Hebrew sorceress and diabolical powers, as is the distinctive mark of modern witchcraft. Trafficking with idols, using charms, invocations, &c., seem to constitute the crime of witchcraft, so often referred to in the Scriptures, both of the Old and New Testament. Among the early Christians, the belief in the active agency of the spirit of evil in human affairs became more fully developed than it had previously been; and it has been a familiar notion with Christian writers, from an early period, that the gods of the ancients were actually wicked spirits, who had led the nations astray from God, and blinded them to destroy them. Hence they have attributed to the heathen oracles the character of prophecy, but ascribed their prophetic powers to the devil; and it is well known that the Sibylline oracles have been quoted, by Christian theologians, in proof of the divine character of the Saviour. "There appears nothing," says Sir Walter Scott (Demonology and Witchcraft) "inconsistent in the faith of those, who, believing that, in the elder time, fiends and demons were permitted an enlarged degree of power in uttering predictions, may also give credit to the proposition, that, at the divine advent, that power was restrained, the oracles silenced, and those demons who had aped the divinity of the place, were driven from their abode on earth, honoured as it was by a guest so awful." The opinion here alluded to is the commonly-received opinion that the heathen oracles were struck silent at the time of the coming of Jesus Christ. (See *Demon*, and *Devil*.) The legends of the saints, the tales of the trials and temptations of holy anchorites, in many of which the devil plays so important a part, contributed to extend and confirm the popular notions; and, a direct diabolical agency being once assumed and allowed, there was nothing too absurd to be engrafted on it. The insane fancies of diseased minds, unusual phenomena of nature, and the artful machinery of designing malignity, ambition, or hypocrisy, were all laid at Satan's door. In the *Sachsenspiegel* (q. v.) of the thirteenth century, the sorcerer and the witch are ordered to be burned; but it was not until the fifteenth century that the proceedings against witchcraft assumed their most hideous form. In 1484, Innocent VIII. issued a bull directing the inquisitors to be vigilant in searching out and punishing those guilty of this crime; and the form of proceeding in the trial of the offence was regularly laid down in the *Malleus Maleficorum* (Hammer of Witches), which was issued soon after by the Roman see. The bull of Innocent was enforced by the successive bulls of Alexander VI. (1494), Leo X. (1521), and Adrian VI. (1522). Of the extent of the horrors which followed, during two centuries and a half, history gives us her record. We are told that 500 witches were burned at Geneva, in three months, about the year 1515; that 1000 were executed in one year in the diocese of Como; in Würtzburg, from 1627 to 1629, 157 persons were burned for witchcraft; and it has been calculated that not less than 100,000 victims must have suffered, in Germany alone, from the date of Innocent's bull to the final extinction of the prosecutions. The last execution in Würtzburg took place so late as 1749, and a witch was burned in the Swiss canton of Glarus in 1780. Bamberg, Paderborn, Würtzburg and Treves were the chief seats of this delusion in Germany. In England, the state of things was no better; and even the reformation, which exploded so many other errors, seems to have had no influence upon this. Individual cases of trial for witchcraft occur in this country previous to the enactment of any penal statute against it; and the successive statutes of Henry VI. Henry VII. (1541), Elizabeth (1562), and James I. (1603),—the last passed when lord Bacon was a member of the house of commons, and not repealed until 1736,—show the extent of the legislative proceedings in regard to this imaginary crime here.* The judicial proceedings were checked chiefly by the firmness of Holt, who, in about ten trials, from 1694 to 1701, charged the juries in such a manner as to cause them to bring in verdicts of acquittal. Yet, in 1716, Mrs Hickes and her daughter, nine years of age, were hanged for selling their souls to the devil, and raising a storm by pulling off stockings and making a lather of soap. The number of those put to death in England has been estimated at about 30,000! The last victim executed in Scotland perished in the eighteenth century (1722). "She was," according to Sir Walter Scott, "an insane old woman, who had so little idea of her situation as to rejoice at the sight of the fire which was destined to consume her. She had a daughter lame both of hands and feet—a circumstance attributed to the witch's having been used to transform her into a pony, and get her shod by the devil."—America furnishes a chapter in this dreadful history of human folly. In 1692, nineteen persons were executed, and one pressed to death, in Salem and its vicinity, for the crime of witchcraft; but, though several were condemned and many accused, there were no executions subsequent to that year.—See, on this subject, Horst's *Zauber-Bibliothek*, &c.—i. e. Magical Library, or of Magic, Theurgy and Necromancy; Magicians, Witches, and Witch-Trials, Demons, Ghosts, and Spectral Appearances (Mentz, 6 vols., 8vo., 1826); and his *Dämonomagie*, or History of the Belief in Magic, &c. (2 vols., 1818).

According to the notions of the times above indicated, witches were able, with the assistance of the devil, not only to foretel events, but to produce mice and vermin; to deprive men and animals, by touching them, or merely breathing upon them, of their natural powers, and to afflict them with diseases; to raise storms; to change themselves into cats, and other beasts; &c. The compact with the devil was sometimes express, whether oral or written, when the witch abjured God and Christ, and dedicated herself wholly to the evil one, or only implied, when she actually engaged in his service, practised infernal arts, and renounced the sacraments of the church. The express compact was sometimes solemnly confirmed at a general meeting, over which the devil presided, and sometimes privately made by the witch signing the articles of agreement with her own blood, or by the devil writing her name in his black book. The contract was sometimes of indefinite duration, and, at others, for a certain number of years. The witch was bound to be obedient to the devil in every thing, while the other party to the act promised her wealth and treasures; but the gold thus obtained usually turned into some worthless material in the hands of its possessor. These and similar facts were gathered from the *voluntary confessions* of persons accused of this crime, whose ingenuity was generally quickened by the application of what was then called "*gentle torture.*" General assemblies of witches were held yearly or oftener, in which they appeared entirely naked, and besmeared with an ointment made from the bodies of unbaptized infants. To these meetings they rode, from great distances, on broomsticks, pokers, goats, hogs or dogs; the devil taking the chair under the form of a goat. Here they did homage to the prince of hell, and offered him sacrifices of young children, &c., and practised all sorts of license until cock-crowing. Besides extorting confessions by torture, it was usual to subject the accused to the witch-ordeal; that is, their thumbs being tied together, they were thrown into the water, and if they did not sink they were considered guilty.

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* "To deny the possibility, nay, actual existence, of witchcraft and sorcery," says Blackstone (Commentary on the Laws of England. B. iv., ch. 4, sec 6), "is at once flatly to contradict the revealed word of God in various passages both of the Old and New Testament; and the thing itself is a truth to which every nation in the world hath in its turn borne testimony, either by examples seemingly well attested, or by prohibitory laws; which, at least, suppose the possibility of a commerce with evil spirits."

WITCH-HAZEL (*hamamelis virginica*); a North American shrub, remarkable for putting forth its flowers at the season when most forest-trees are parting with their leaves. It grows six or eight feet high, dividing, at base, into several cylindrical, grayish branches: the buds and young shoots are covered with short down: the leaves are about four inches long by two or three broad, alternate, petiolate, oval, obtuse, having a few coarse indentations: the flowers are clustered, yellow and showy, having long and linear petals. A forked twig of the witch-hazel forms the celebrated divining rod, which has been used in many parts of the interior to impose on the credulous.

WITHER, GEORGE, an old English poet, was born at Bentworth, in Hampshire, June 11, 1588. His parents, who were very respectable, sent him to Magdalen college, Oxford. He was, however, prematurely removed from the university, with a view to agricultural pursuits; but, disliking a country life, he went to London, and entered himself a student of Lincoln's Inn. Here he paid more attention to the muses than to law, and acquired the reputation of a poet. In 1613, appeared his celebrated satires, entitled Abuses Stript and Whipt, the severity of which led to his confinement in the Marshalsea, where he wrote his Satire to the King, which procured his release. In 1615, he published his Shepherds Hunting, written during his imprisonment in the Marshalsea, the most poetical of all his works. Attaching himself to the Puritans, he was violently assailed by their opponents. He took an active part on the side of parliament when the civil war broke out, and sold an estate to raise a troop of horse, and obtained the rank of major. He was made a justice of peace, by the long parliament, for three counties, and major-general of all the horse and foot in the county of Surrey, by Oliver Cromwell. On the restoration, he lost all which he had amassed by his previous employment; and, having published a piece denominated *Vox Vulgi*, he was committed to Newgate, and afterwards to the Tower, where he was denied the use of pen, ink and paper. In this confinement he remained more than three years, and wrote several things, by the connivance of the keeper, which were subsequently published. When he was released is not recorded; but he died May 2, 1667. Some of his works have been republished by Sir Egerton Brydges, including his Shepherds Hunting (1814), his Fidelia (1815), and his Hymns and Songs of the Church (1815). The other works are scarce.

WITHERING, WILLIAM; a distinguished physician and writer on botany, was born in 1741. He studied at Edinburgh, where he took his doctor's degree in 1766. He then settled at Stafford, and afterwards removed to Birmingham, where his skill and assiduity speedily raised him to eminence in his profession. The chief objects of his attention, independent of his duties as a medical practitioner, were chemistry and botany; the result of his researches appeared in several valuable publications. Being subject to pulmonic disease, he thought it desirable, in 1793 and 1794, to pass the winter at Lisbon; and, after his return home, he did not again resume, to any extent, his professional practice. He died at the Larches, near Birmingham, in November, 1799. His principal publications are, a Systematic Arrangement of British Plants (2 vols., 8vo., 1776, extended, in the edition of 1787, to three volumes, and, in that of 1796, to four); an Account of the Scarlet Fever and Sore Throat, or *Scarlatina Anginosa* (1779, 8vo.); an Account of the Foxglove, and some of its Medical Uses, with Practical Remarks on the Dropsy and other Diseases (1785, 8vo.); a Chemical Analysis of the Waters at Caldas da Reinha (Lisbon, 1795, 4to.); besides a translation of Bergman's *Sciagraphia Regni Mineralis*, and papers in the Philosophical Transactions relative to mineralogy. The name of *Witheringia* has been bestowed on a genus of American plants by L'Heritier; and the native carbonate of barytes has received the appellation of *Witherite*, in honour of doctor Withering, who first discovered and described it.

WITHERSPOON, JOHN, D.D., LL.D., president of the college at Princeton, New Jersey, was born in Yester, Scotland, Feb. 5, 1722, and educated at Edinburgh. He was settled in the ministry, first at Beith, and afterwards at Paisley, and became one of the most distinguished of the Scottish clergy for talents and influence. He published, while there, his Characteristics, and became the leader of the orthodox part of the clergy. He was invited to remove to several distinguished cities in Europe, but, at length, accepted an appointment to the presidency of the college at Princeton, New Jersey, and came to that state, with his family, in 1768. The war of the revolution dispersed the students, and left him at leisure to engage in civil employments, to which he was almost immediately called. He was elected a member of the convention which formed the constitution of New Jersey, and, in 1776, was appointed a member of congress, and retained a seat in that body till the conclusion of peace. His name is affixed to the Declaration of Independence, and the Articles of Confederation. After the war, the college was re-opened, and he returned to his duties there. During the last two years of his life, he suffered the loss of his sight. He died November 15, 1794, in the seventy-third year of his age. He possessed a mind of great vigour and activity, of uncommon shrewdness and humour. His learning was very various and extensive, and his discernment of character singularly keen. His preaching was characterized by perspicuity and energy. He was an able politician, and a zealous friend of liberty, and a highly amiable, amusive, and instructive companion. His works have been published in 4 vols., 8vo.

WITNESS. See *Evidence*.

WITNEY; a market-town in Oxfordshire, 63 miles W. N. W. from London. It is pleasantly situated on the river Windrush, over which is a good stone bridge, erected in 1822. The town consists chiefly of two streets, the houses of which are of a neat and uniform character. The chief manufacture of Witney is in blankets, for the excellent quality of which it has long been distinguished. The manufactures of this town and the district for twenty miles round, were incorporated in the reign of Queen Anne. At that period they kept 150 looms at work, employed about 3000 persons, and used a thousand packs of wool weekly. The charter, however, no longer exists. Other woollen goods are made here, besides gloves, paper, malt, &c. Population in 1831, 5336.

WITT, De. See *De Witt.*

WITTEKIND, or WITIKIND; a celebrated prince of the Saxons, and their principal champion in the war against Charlemagne. The Saxons, a numerous and brave people, inhabited the northern part of Germany, between the Rhine, the Elbe, and the North sea, or the present Westphalia and Lower Saxony, under the names of Eastphalians, Westphalians, and Engrians. (See *Saxons.*) Charlemagne, desirous of putting a stop to their frequent incursions into his territories, and moved also partly by religious motives, determined to subdue these wild heathens. The war began in 772, and continued for about thirty years, till 803, with some intermissions. The Saxons, inferior to the Franks in military discipline and skill, were repeatedly defeated, and several times yielded to the commands of their victorious enemy, but again took arms as soon as his attention was drawn to other parts of his extensive empire. After gaining several decisive victories (783), Charlemagne had recourse to conciliatory measures, and prevailed upon Albion and Wittekind, the two leaders of the Saxons, to submit, on advantageous conditions, and embrace Christianity (785.) Wittekind, who had been obliged to flee to Denmark, obtained the restoration of his territories, and, according to some writers, was created duke of Saxony. (See *Germany, History of.*) Wittekind is supposed to have fallen in battle against Geroald, duke of Suabia, in 807. The present Saxon princes claim a descent from Wittekind, but without much ground.

WITTENBERG, a town of historical interest as connected with the reformation, is situated on the Elbe, in the Prussian province of Saxony. Here is a bridge, 500 ells long, over the Elbe. Including the military, the town contains 6345 inhabitants. Since 1817, two new suburbs have grown up. The church in which Luther fixed up his ninety-five celebrated theses, Oct. 31, 1517, and, in which he, Melancthon, and the electors Frederic the Wise, and John, lie buried, has been repaired by the Prussian government. The university, founded in 1502, by the elector Frederic the Wise, has been united, by the Prussian government, with that of Halle, and a theological seminary has been established instead of it. Charles V. took Wittenberg in 1547, after the battle of Mühlberg; but the property of the people, their religious worship, and the tombs of the reformers, were left untouched. The emperor was requested to disinter the body of Luther; but he answered, "I wage no war with the dead." The city was bombarded in the seven years' war, and dismantled. As the ditch and wall remained, Napoleon ordered marshal Victor to restore the fortifications, and garrisoned the place with Poles. The Prussians took it by assault at midnight, Jan. 12, 1814. The Prussian general, count Tauenzein, received the name Tauenzein von Wittenberg in consequence of this victory. The king of Prussia laid the corner-stone of a monument, in honour of Luther, in Wittenberg, on the third centennial celebration of the reformation. In 1822, the statue of the reformer, made of cast iron, by Schadow, was erected.

WLADIMIR (*Wlodimir*), czar of Russia, became, in 981, after the death of his two brothers, master of the Russian dominions, which he increased by the conquest of several neighbouring tribes. Upon his marriage with the Greek imperial princess Anna Romanowna, in 988, he was baptized, and together with his whole nation, adopted Christianity. The first Christian teachers of Russia came from Constantinople, and introduced the Greek Catholic worship, which still prevails in Russia. Wladimir, as the first Christian ruler, and the founder of many convents and schools, is called in Russian history, a saint; and, as he laid the foundation of the subsequent greatness of the empire, he is also called the Great. He died in 1015. His descendants divided the empire among themselves to their own ruin. In 1782, Catharine II. founded the order of St Wladimir in honour of him.

WOAD (*isatis tinctoria*); a cruciferous plant, occasionally cultivated for its leaves, which afford a dye, in use as a substitute for indigo. The seeds are sown on well-prepared land, and fresh-broken, old pasture ground is preferred. As the great object is to produce large leaves, the mode of culture given, by the best gardeners, to spinage should be imitated—that of sowing on a very rich, well-pulverized soil, thinning the plants so that they may not touch each other, keeping them perfectly clear of weeds, and frequently stirring the soil between them. The seeds are sown in July; and the plants, when they come up, are weeded and thinned. Next July, or earlier, the first crop of leaves may be gathered; and two or three others will be obtained during the season. At the end of the second year, the plants may be ploughed down, as the third year they will run to seed, and produce but small leaves. The leaves are pressed, and the juice treated as in making indigo; but such is the cheapness of the latter article, that the cultivation of woad is not much attended to at the present time. The plant grows wild in the south of Europe. The radical leaves are crenate, those of the stem oblong and arrow-shaped; the flowers are small and yellow, and the pods elliptical, flat, and contain a single seed.

Woad is prepared for use as follows:—The plant puts forth, at first, five or six upright leaves, about a foot long and six inches broad. When these hang downwards and turn yellow, they are fit for gathering. Several crops are gathered in one year. The leaves are carried directly to a mill, much like the oil or tan mills, and ground into a smooth paste. The paste is laid in heaps, pressed close and smooth, and the blackish crust which forms on the outside re-united if it happen to crack; if this precaution were omitted, little worms would be produced in the cracks, and the woad would lose part of its strength. After lying for fifteen days, the heaps are opened, the crust rubbed, and mixed with the inside, and the matter formed into oval balls, which are pressed close and solid in wooden moulds. These are dried upon hurdles. In the sun they turn black on the outside, in a close place yellowish, especially if the weather be rainy. The dealers in this commodity prefer the first, though it is said the workmen find no considerable difference between the two. The good balls are distinguished by their being heavy, of an agreeable smell, and, when rubbed, of a violet colour within. For the use of the dyer, they require a further preparation. They are beaten with wooden mallets, on a brick or stone floor into a gross powder, which is heaped up in the middle of the room to the height of four feet, a space being left for passing round the sides. The powder, moistened with water, ferments, grows hot, and throws out a thick fetid fume. It is shovelled backwards and forwards, and moistened every day for twelve days, after which it is stirred less frequently, without watering, and, at length, made into a heap for the dyer. The powder thus prepared gives only brownish tinctures, of different shades, to water, to alcohol, to ammonia, and to fixed alkaline lixivia. Rubbed on paper, it communicates a green stain. On diluting the powder with boiling water, and, after standing for some hours in a close vessel, adding about one twentieth its weight of lime newly slacked, digesting in a gentle warmth, and stirring the whole together every three or four hours, a new fermentation begins: a blue froth rises to the surface, and the liquor, though it appears itself of a reddish colour, dyes woollen of a green, which, like the green from indigo, changes, in the air, to blue. This is one of the nicest processes in the art of dyeing, and does not well succeed in the way of a small experiment.

WODEN, OR ODIN; one of the most powerful deities in northern mythology. Some have derived him from the Indian Buddha. The ancient Saxons and Thuringians honoured him as their god of war; and the former solemnly vowed, in their war with Charlemagne, to sacrifice to him all their prisoners. (See *Northern Mythology*.) The Romans recognised their Mars in this northern god.

WOFFINGTON, MARGARET, an actress, highly distinguished for her beauty and talents, was born at Dublin, in 1719. Her father kept a huckster's shop; and she commenced her theatrical career as the pupil of madame Violante, an exhibitor of feats of activity on the tight rope, who, about 1728, formed a company of Lilliputian actors. In these exhibitions little Woffington, then in her tenth year, attracted much notice as the representative of Macheath in the Beggar's Opera. A few years after, she procured an advantageous engagement at one of the regular Dublin theatres, where she acquired so much reputation, that she was invited to London; and, in 1740, she made her appearance at Covent garden, in the character of Sylvia, in the Recruiting Officer. She then took up the part of sir Harry Wildair, in which she was extremely successful. In comic characters, from the finished coquette or haughty lady of high rank and fashion, to the affected old maid, or vulgar termagant, she displayed a truth and facility of personification which has rarely been exceeded. Her attractions in private life were widely felt and acknowledged, and her society sought by persons of rank and talents. She was president of the weekly beef-steak club, held in the green room of Covent garden theatre. At length the derangement of her health induced her to retire from the stage in 1759; and her death took place in 1760.

WOHLGEMUTH, MICHAEL, an old German painter, born in 1434, died in 1519, was the teacher of Albert Dürer. There is a large altar piece by him in Nuremberg, his native city. There are also fine pictures by him in the galleries of Vienna, Munich, and other cities, and those of private persons. Some have also thought the beautiful Last Judgment at Dantzic to be from his pencil. Like other painters of his time, he was also an engraver on copper and wood. The Chronicle of Nuremberg, published in 1493, contains woodcuts by him.

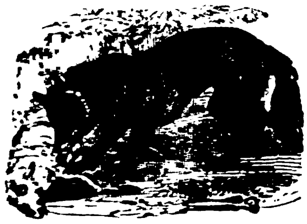
WOIWODE; a Sclavonic word, which signifies leader in war, and is a compound of the two Sclavonic words, *woi*, troops, and *wodit'*, to lead. The princes of Walachia and Moldavia were called *woiwodes* before they received from the Greek emperors, with whom they were in some degree connected (1439), the title of *despot*; instead of which they adopted, at a later period, the title of *hospodar*, which signifies lord. At present, *woiwode* signifies a Turkish farmer-general of the taxes of a district. In the old kingdom of Poland, *woiwodes* were governors of the districts (woiwodeships) into which the kingdom was divided. They administered justice, had charge of the police, and formed the first class of the temporal estates of the kingdom. In the time of war, when the nobility were called to march, each woiwode commanded the nobility of his woiwodeship.

WOLCOT, JOHN, M.D., a poet and satirist, was born at Dodbrock, in the county of Devon, in 1738, educated at the free school of Kingsbridge in the same county; after which he visited France, and, on his return, was articled to an uncle, an apothecary at Fowey. He early showed an attachment to poetry, as also to drawing, in which he became a considerable proficient. He subsequently visited London, to attend the hospitals, and, in 1767, obtained the degree of doctor of physic from Scotland, and accompanied Sir William Trelawney to Jamaica, of which the latter was appointed governor. Here meeting but little encouragement as a physician, he obtained orders, and became rector of a living in the gift of his patron, which, being attended exclusively by a black congregation, received little of his attention. On the death of Sir William Trelawney, he returned with his widow to England; and, on the decease of his uncle, who left him the principal part of his property, he settled as a physician, first at Truro, and afterwards at Helstone, in Cornwall. While in this situation, he had the merit of discovering the talents of the late celebrated painter Opie, then a mere youthful miner, with whom, (in 1780), he came to London. Here he soon rendered himself conspicuous by those satirical compositions which he published under the name of *Peter Pindar*, and which, for the drollery and great peculiarity of their humour, became, in the highest degree, popular. His attacks were, in the first instance, chiefly levelled at the royal academicians; but, ultimately, the harmless singularities of George III., his consort, and family, formed the principal field for his wit. So much was thought of his talents, that a negotiation was at one time entered into with him, by the under secretary of the treasury, to become either silent, or to direct his satire against the opponents of administration, which, however, came to nothing, owing to his backwardness to write on that side of the question. Having obtained an annuity from his booksellers of £250 per annum, and being otherwise in easy circumstances by the sale of his productions, he passed the close of his life in ease and convivial enjoyment, interrupted, however, in the sequel, by blindness and other maladies. His death took place in Somers Town, in 1819, in the eighty-first year of his age. As a man, doctor Wolcot assumed much license, and may be regarded as an epicurean of the coarser class. As a poet, he exhibits freshness, *naïveté*, and a portion of humour, singularly mark-up of the playful and the biting. His works have lost much interest, owing to the temporary and personal nature of his subjects; but the extreme felicity with which he exposed the empty pretensions of false greatness, will not allow them to be altogether forgotten. His poetical works were collected, in 1812, in five volumes, octavo.

WOLD, WELD, YELLOW WEED, OR DYER'S WEED (*reseda luteola*); an imperfect biennial, with small fusiform roots, and a leafy stem, from one to three feet in height. It is a native of Italy and other parts of Europe, and is cultivated for the sake of its stalk, flowers, and leaves, which are employed in dyeing yellow. Wold requires the growth of nearly two summers before it comes to maturity: the crop is also liable to fail, and is exhausting to the soil. It is preferred to all other substances for giving the lively green lemon yellow; but as it is found, when employed in topical dyeing, to degrade and interfere with madder colours more than other yellows, and to stain the white parts, quercitron bark is commonly employed in preference to it. It is still, however, employed in dyeing silk a golden yellow, and in paper-staining.

WOLE, in northern mythology, the protecting spirit of the earth—an old prophetess. The same *Voluspa* (the vision of Wole), given to the most ancient part of the Edda, is derived from her.

WOLF (*canis lupus*). The wolf is by some naturalists considered the original stock of the domestic dog; and, indeed, it very much resembles a large dog in its general appearance. The European wolf habitually leads a solitary life, but, when urged by hunger, unites in packs, which, at times, even become dangerous to travellers. It possesses such strength that it is able to carry off a sheep at full speed, and few dogs are able to attack it with success. When taken young, it is easily tamed, and becomes attached to its keeper, recognising him even after a year's absence. The female brings forth her young in a retired place in the forest, and defends them courageously.



Wolves were extirpated much earlier in England than any other country of Europe. No mention is made of them in the English annals after 1281. The last wolf known in Scotland was killed in 1680, and in Ireland one was killed in 1701.

The American wolf is probably a distinct species; but this point is not yet perfectly ascertained. It was formerly numerous in all parts of the United States, but is now almost extinct in the more settled districts.

There is another species of wolf—the prairie or barking wolf (*C. latrans*)—on the unwooded plains of the Missouri.

The black wolves are probably mere varieties of the common species.

WOLF, ARNOLDINA, was born at Cassel, in Germany, in 1769. She lost her father, an officer of the Hessian government, early, but her mother took great care of her education. In her eighteenth year she was attacked by the horrid disease called *scabies humida*, and passed twenty-six weeks almost entirely without sleep. On one occasion, in the midst of her severe sufferings, she repeated all the songs which her memory could furnish; after which she composed a poem extempore. Five other poems followed in a similar way. A friend published them in 1788, and a second edition was soon called for. Becoming entirely deprived of strength, she fell, after six months, into a state of apparent death, in which she retained the exercise of no sense except that of hearing, and was conscious only of the fear of being buried alive. After four weeks, she began to recover, and was eventually restored to full health. She married, in her twenty-third year, a Mr Wolf, became the mother of nine children, and died in 1820. Doctor Wiss, of Smalcalden, where she lived, published the poems of Arnoldina Wolf (1817), with a history of her disease.

WOLF, CHRISTIAN FREDERICK VON, chancellor of the university of Halle, a distinguished German philosopher and mathematician, was born in 1679, at Breslau. In 1699, he went to the university of Jena, to study theology; but mathematics and philosophy absorbed almost his entire attention. He studied zealously the works of Descartes and Tschirnhausen. In 1703, he obtained permission to lecture at the university of Leipsic, in consequence of his disputation, *De Philosophia practica universali Methodo mathematica conscripta*, and delivered philosophical and mathematical lectures. Several mathematical works made his name known in foreign countries. When the Swedes occupied Leipsic, in 1706, he left it, and, upon the recommendation of Leibnitz, in 1707, was appointed professor at Halle, where he acquired great reputation. His mathematical lectures were remarkable for clearness, precision, and systematic method. His philosophy, in which he pursued the same method, met with general approbation; and his method began to be applied also to other sciences, frequently in a pedantic and exaggerated manner. His colleagues, particularly the theologians, declared him a heretic and an infidel, and, at last, actually accused him to the government. King Frederic William I. Nov. 15, 1723, dismissed him from his office, and ordered him to leave Halle in twenty-four hours, and the Prussian states within two days, threatening him with the gibbet in case he should remain. He received an honourable appointment at Marburg. The contest respecting his philosophical system now became general, and almost all Germany took part for or against him. He received offers of appointments in other countries; but he refused these, as well as an invitation to return to Halle, though the examination of his philosophy, by a committee appointed for that purpose, at Berlin, ended in his entire exculpation. In 1740, however, when Frederic the Great, who esteemed him highly, ascended the throne, he returned to Halle. In 1745, the elector of Bavaria, as vicar of the empire, raised him to the rank of nobility. Wolf's fame spread over Europe; but his reputation as a lecturer declined in the latter years of his life, and the number of his hearers decreased. He died in 1754, at the age of seventy-six years. His merits in promoting the progress of philosophy are not to be denied. He directed attention particularly to systematic method. His mathematical method brought light and order into the territory of science; and if the advance of philosophy has shown that the mathematical method is inapplicable to it, in its whole extent, still it cannot be denied, that great credit is due to him for having carried it through one of its stages. His influence on science and the whole intellectual developement of his countrymen was very great. The German language also owes him much. Kant gave the finishing blow to Wolf's dogmatic method.

WOLF, FREDERICK, AUGUSTUS, the greatest philologist of his age, was born in Haynrode, a village near Nordhausen, in Thuringia, in 1759. His father was organist of the village, and subsequently teacher in Nordhausen. His mother, a woman of great ability, educated him well. He early acquired a taste for the study of languages. He was initiated in modern languages by an instructer named Frankenstein, who thought the acquisition of them so easy, if a good foundation was laid in the ancient languages, that he used to lend young Wolf the dictionary of each of them for two months only, a period which he considered sufficient for acquiring the necessary number of words, by copying and learning by heart. Even while at school, at Nordhausen, Wolf pursued the comparative study of the ancient and modern tongues, in order to draw up a comparative grammar. Before entering the university, he had made himself acquainted, partially at least, with the principal classic authors, and those of France, Spain, Italy, and England. His father instructed him in music, and, after having prepared him sufficiently, put him under the care of a learned organist, named Schröter, who delighted him by his acquaintance with the ancient writings on music, while he tormented him with the mathematical part of the science. For mathematics Wolf had no taste, either in his youth or in his riper age. At the age of nineteen years, he went to the University of Göttingen, with the firm intention of devoting himself to philology exclusively. He requested to be called, in the form of matriculation, *philologiæ studiosus*, which was so uncommon a thing, that much objection was made to it; but he was not to be diverted from his resolution, though even Heyne tried to persuade him to have himself entered as *studiosus theologiæ*. His irregular attendance on the lectures brought him into bad repute so that Heyne refused him permission to attend his lectures on Pindar, as utterly unqualified. But Wolf studied so much the more assiduously alone, and in the library of the university. In 1770, he published, at Göttingen, Shakspeare's Macbeth, with explanatory notes, for the use of some students whom he instructed in the ancient languages and English. In consequence of his constant application, he was twice dangerously sick. Before he left Göttingen, in 1779, he laid before Heyne his views respecting Homer, which differed from those of the distinguished professor, and were peremptorily rejected by him. In the same year, he went as teacher extraordinary to the academy at Ilfeld, where he made himself known to the philological world by his edition of Plato's Banquet, with notes in German, perhaps with a view of making himself known to the Prussian ministers, as he already had his eye upon a chair in a Prussian university, the name of Frederic the Great exercising a magic power on genius. In 1782, he was made rector of the town school at Osterode. In the next year he was called upon to become ordinary professor of philosophy, particularly of the science of education, and director of the academy at Halle, with a salary of less than 200 dollars, which place and poor salary, though already married, he preferred to a much more lucrative one, also offered to him. He was then but twenty-four years old. At first, the students did not understand the tone he assumed; and it was not till he treated them as he had done his pupils at Osterode, that he obtained many hearers. It was not till the last ten years of his residence in Halle, that he returned to his first mode of teaching. As an academical teacher, Wolf followed his own peculiar views: he believed that classical antiquity must be considered as a model of public and private life, founded on the noblest ideas, and be treated in this light, as a means of forming the minds of pupils at the universities. His great aim was to be a teacher. To appear as an author, which so many academical instructers regard as of the first importance, was with him but a secondary object. His uncommon activity is shown by the fact that, during the twenty-three years of his residence at Halle, he delivered above fifty courses of lectures, all replete with the traces of a genius of the highest order, in addition to his lectures and labours at the philological seminary. For the use of the students attending his mythological lectures, he published, in 1784, a new edition of Hesiod's Theogony, with a preface and a kind of commentary from lectures already delivered: but this was the only instance of his connecting any publication with his lectures. In the preface a few cautious remarks show his views of the earliest Greeks, as exhibited fully, at a later period, in his *Prolegomena* to Homer. It does him great credit to have waited so long, and to have weighed and considered his ideas so often before publishing them. The book establishment connected with the orphan asylum at Halle, requested him to undertake a reprint of Homer's works from the Glasgow edition. From that period, he often lectured on the whole of Homer. In 1792, appeared his edition of Demosthenes's Speech against Leptines, which added much to his reputation as a philologist, on account of its perfect Latinity, and the masterly character of its introduction, commentary, and corrections of the text. In 1795 followed the first volume of his *Prolegomena* to Homer, in which he gives his views respecting the ancient and original form of the Iliad and Odyssey, the changes which they have experienced, and the most probable mode of restoring them; showing, with rare sagacity and erudition, that the Iliad and Odyssey, as they exist at present, are not the work of one Homer, but of several Homeric rhapsodists. (See *Homer*.) The work attracted great attention all over Europe, gave rise to many controversies, and to the most important historical and critical inquiries. The author had no objection to controversy if truth was thereby elicited, but was offended with the assertions of certain scholars that they had long entertained similar ideas. He became, on this account, involved in disputes with several of them; and Heyne even endeavoured to assume the credit of having suggested to Wolf the ideas which led him to this result. This caused the spirited Letters to Heyne, of which the three first are considered as excellent models of learned controversy and polished irony. In 1801, Wolf laid the critical knife to several speeches of Cicero, proving that they are not genuine, but ought to be considered as mere exercises in declamation, and are unworthy of the great orator. In 1802 appeared his edition of Suetonius. After having refused an vitation to Leyden, in 1796, and, in 1798, to Copenhagen, as director-general of the higher schools, and, in 1805, to Munich, he was made Prussian privy counsellor. Whilst he was occupied with a new edition of the Homeric works (1804 to 1807), the high school at Halle was abolished. Wolfe was now in a very disagreeable situation. In 1807, he went to Berlin, and became member of the department for public instruction in the ministry of the interior, professor of the university, and member of the academy; but he gave up all these appointments, reserving only the right to lecture, according to his pleasure, in the university of Berlin. To the leisure which he now enjoyed, we owe his incomparable *Darstellung der Alterthumswissenschaft*, and the translations from Horace, Homer, and Aristophanes, which are as spirited as skilful. His *Analecta*, one of the most scientific periodicals, he suddenly discontinued, and from that time, published nothing more, being indignant at the censorship which had been established. His health had become broken, and his physician had advised him to visit the south of Europe. In July, 1824, he arrived at Marseilles, where he died, August 8, of an affection of the lungs. The classical ground of the ancient Massilia covers the bones of him who may be said to have first elevated philology to a real science. The disciples of Wolf are numerous, animated with the independent spirit of their great master, and free from the trammels of a school. Wolf's face was noble, and expressed his high-minded character. Fred. Tieck made several marble busts of him. One of his pupils, professor Hanhart, in Basle, has published Reminiscences of Frederic Augustus Wolf (1825.)

WOLFE, CHARLES, a young Irish divine, of great poetical talent and much promise, was born in Dublin, in 1791. His mother, removing to England on the decease of his father, placed him at Hyde abbey school, in Winchester, where he remained till 1808, when the family returned to Ireland. The following year he entered Trinity college, Dublin, and soon acquired distinction by his abilities and assiduity, which were eventually rewarded by a scholarship. Having taken orders, he obtained the curacy of Castle Caulfield, in the diocese of Armagh; but the active labour in which the superintendence of a large and populous parish involved him, combined with a disappointment of a tender nature, made rapid inroads upon a constitution naturally far from robust, and unequivocal symptoms of consumption displayed themselves. After lingering till the winter of 1822, he died about the end of February, in the following year. The composition which has given him considerable posthumous celebrity, is his Ode on the Death of Sir John Moore, commencing

"Not a drum was heard,"

which lord Byron pronounced "the most perfect ode in the language." Besides this piece, which has appeared anonymously in an Irish newspaper, Mr Wolfe was the author of several minor poems of great beauty. His Remains were published at Dublin (2 vols., 1825), with a notice of his life.

WOLFE, JAMES, a distinguished English general officer, was the son of lieutenant-general Wolfe, and was born at Westerham, in the county of Kent, in [illegible]. He applied himself early to the profession of arms, for which he was particularly adapted by the bravery, elevation, and decision of his character. Even at the early age of twenty, he attracted attention by his military skill, and, during the whole of the German war, was actively employed, and regarded as a great and rising soldier. At length he was called into high and independent command by the first Mr Pitt, who appointed him to the charge of the important expedition against Quebec. Here he, singly and alone in opinion, formed that great, hazardous, but necessary plan of operation, which drew out the French to their defeat, and insured the conquest of Canada. Having surmounted all obstacles, he encountered the enemy on the heights of Abraham, where, in the moment of victory, he received a ball in the wrist, and another in the body, which rendered it necessary to bear him off to a small distance in the rear. There, roused from fainting in the agonies of death, by the sound of "They run," he eagerly asked, "Who run?" and being told the French, and that they were defeated, he exclaimed, "Then I thank God, and die contented," and almost instantly expired. This event took place Sept. 13, 1759, in the thirty-fourth year of his age. A national monument is erected to the memory of this officer in Westminster abbey. West's picture of the Death of Wolfe has become generally known by Woollett's admirable engraving. The Life and Correspondence of General Wolfe was published in London, in 1827 (2 vols., 8vo.)

WOLFENBÜTTEL; a principality of Germany. In a wider sense, Wolfenbüttel formerly comprised the possessions of the elder line of the house of Brunswick, or Brunswick-Wolfenbüttel, in the circle of Lower Saxony (see *Brunswick*); in a narrower sense, that part of the above-mentioned region which now forms the districts of Wolfenbüttel, Schöningen, Harz, and Weser. The town of Wolfenbüttel, till 1754, the residence of the dukes of Brunswick, lies in a low, marshy district, on the Oker, thirty-seven miles south-east of Hanover; lat. 52° 10′ north; lon. 10° 40′ east. Its fortifications have been demolished. Population, 6810. There is here an old ducal castle, an arsenal, and a celebrated library, containing 10,000 manuscripts, and a great number of the early impressions of printed works: the whole number of volumes is stated to be nearly 200,000. The second volume of Ebert's work on Manuscripts (*Zur Handschriftenkunde*), published at Leipsic in 1827, contains a catalogue of the Wolfenbüttel manuscripts.

WOLFF, PIUS ALEXANDER, and his wife; two of the most distinguished and accomplished theatrical performers whom Germany has produced. After the stiff and showy mannerism, the conventional pathos, the declamatory rather than dramatic performance of the French, particularly in the higher drama, had given place, in Germany, to a careful imitation of reality, or to noise and violence in the expression of emotion, and every one thought himself intended for an actor, if he had an imposing figure and sonorous voice, the true genius of dramatic art arose, awakened particularly by Göthe at Weimar, and by the union of thought and feeling, of the strength of nature, with the regulated tone of art, as well as by the subordination of reality to ideality, showed the true aim of the actor. The stage at Weimar was adorned by a number of masterly performers, among whom was Wolff. He was born about 1782, at Augsburg, received a very good education, and went upon the stage animated by the idea, that it is the actor's duty to reproduce the conceptions of the poet, to conceive his creations in their whole spirit, and even to catch the tone of the time in which the scene is laid. In 1804, he became attached to the Weimar theatre, developed his talents in a constant intercourse with Göthe and Schiller, subsequently went to Berlin, and died in 1828. He early excelled in tragedy, and subsequently played also in comedies. He was himself a dramatic writer, and the author of Cæsaria, a comedy; Duty for Duty, a melodrama; the Dog of Aubry; Preciosa, with music by Weber, and other works. His wife, whom he married in Weimar, and whose maiden name was Malcolmi, is still living, and has sustained the reputation of a superior actress.

WOLFGANG, St, one of the early Christian missionaries, was born in Suabia. He studied at Würzberg, under Stephen, a teacher from Italy, went to Treves with the archbishop of that city in 956, and instructed children in Christianity. He subsequently lived for some time with bishop Bruno, of Cologne, brother of Otho I., emperor of Germany, refused all the advantages which this connexion offered, retired to a convent, was ordained a priest by St Udalrich, and, in 972, went to preach the gospel to the Hungarians. In 974, he was elected bishop of Ratisbon. He held the bishopric during twenty years, and endeavoured to sow the seeds of religion and knowledge among the rude tribes with whom he lived. He died October 30, 994. The Catholic church celebrates his festival on the anniversary of his death. There is a paraphrase of the psalm called *Miserere* by St Wolfgang.

WOLFGANG, Prince of Anhalt, was born in 1492, and began to reign at the age of sixteen years. His court was at Cöthen. In bodily strength and dexterity, and chivalrous character, this prince had hardly his equal. His temper was bold and lively. In 1521, when Luther made his defence at Worms, before the emperor and diet, Wolfgang became his friend and disciple. During the persecutions of the Protestants, he declared that he "should prefer to clean boots, to leave his country and people, and to go off on foot, rather than to become untrue to the gospel." He was one of those who signed and presented, in 1530, the Confession of Augsburg, at the diet of Augsburg. When Charles V. and Ferdinand, at the instigation of the papal legates, endeavoured to oblige the Protestants by threats to give up their preaching, and join in the forms of the Roman Catholic worship, prince Wolfgang and the margrave George stepped up to the emperor, and firmly declared that "they would remain obedient to the emperor if he would leave them undisturbed in the exercise of their religious faith; but, before they would disown God and his gospel, they would submit to lose their heads." Wolfgang was one of the founders of the Smalkaldic league, and Luther used to call him, on account of his many journeys for the promotion of peace, the *legate of God*. Wolfgang was invited to Eisleben by count Mansfeld. Luther also repaired thither, and died there, February 18, 1546. When the war broke out, Wolfgang took part in the campaign which ended with the battle of Mühlberg. The emperor Charles V. now put him under the ban of the empire, on January 12, 1547, when he was at his castle in Bernburg, and gave his territories to one of his Spanish favourites. Wolfgang, on receiving the news of his outlawry, mounted his horse, and rode through the town towards the gate, singing Luther's celebrated hymn,

Eine feste Burg ist unser Gott
(A castle firm is our God,)

He then retired into the Hartz mountains. In 1552, he was reinstated in all his rights. At the age of seventy years, he resigned the government to h cousins, but continued his care for schools and churches. He was the founder of the reformation in Anhalt, being assisted by his learned and wo cousin, George, who had been consecrated bishop by Luther and others, and had often preached. Wolfgang, for the last fifteen years of his life, kept his coffin in his sleeping chamber, with the inscription, "To me, to live is Christ, and to die is gain." (*Phil.* i, 21.) He died unmarried in 1566, and was buried in Zerbst, in the church of St Bartholomew.

WOLFL, Joseph, one of the most accomplished piano-forte players of his age, was born at Salzburg in 1772, and was instructed by Mozart and Haydn. His uncommonly large and flexible hand was a great assistance to him. Mozart was much attached to him. At the age of eighteen years, he became chapel-master to the Polish count Oginski. The count lost his fortune when the Polish revolution broke out, in 1794, and, in 1795, Wölfl went to Vienna, and wrote several operas. In 1801, he went to Paris, where he obtained universal applause, and wrote for the *théâtre comique* an opera called *L'Amour romanesque*. In 1805, he went to England, where he died in 1812. The following anecdote, from Gerber's *Tonkünstlerlexikon*, shows his great skill. Being about to give a concert at Dresden, and the orchestra being assembled for rehearsal, there was no piano ready. At last one was brought, but tuned half a tone too low. In order not to detain the orchestra, he sat down to the instrument, and calmly played in C sharp the concerto which was written in the C key, with perfect precision, purity and readiness. He composed operettas, concerts, and many other musical pieces.

WOLFRAM; an ore of tungsten. See *Tungsten*.

WOLFRAM VON ESCHENBACH. See *Eschenbach*, and *Wartburg*.

WOLGA, or VOLGA (the Russian w having the sound of the English *v*); a river of Russia which has the longest course, and, with the exception of the Danube, the largest volume of water of any river in Europe. It is upwards of 2600 miles in length, and flows into the Caspian sea about fifty miles below Astrachan, by more than sixty branches. The Wolga rises in the government of Tver, from a number of lakes ninety-five miles above the town of Tver, at which place it is navigable. After receiving the Oka above Novgorod, and the Kama below Kazan, it becomes a considerable stream. During a great part of the year, it is shallow, but after the melting of the ice and snow in spring, its waters swell so much about May and June, as to overflow the banks. At this period, large vessels can come up to Astrachan. The country on the river is throughout fertile. By canals it is connected with the Neva and the Northern Dwina, thus affording a communication between the Caspian and Baltic, and Caspian and White seas. The river abounds in fish; and upwards of 10,000 boats are employed in the fishery. The common sturgeon and the beluga (see *Sturgeon*) afford the caviar and isinglass of commerce. Seals also ascend the river from the Caspian sea, and are taken by the fishermen.

WOLKE, Christian Henry, born in 1741, Jever, in Germany, studied at the universities

Göttingen and Leipsic for six years, and, in 1770, formed the plan of a school, in which the pupils should be educated conformably to nature. This plan brought him into connexion with Basedow, with whom he wrote, from 1770 to 1773, an elementary work for the purposes of education. Wolke subsequently took part in Basedow's Philanthropin (see *Schools*), at Dessau, where he continued until 1801. He then went to Petersburg, and afterwards to Leipsic; lived from 1805 to 1814 in Dresden, and the rest of his life in Berlin, where the society for the cultivation of the German language was established mainly by his endeavours, in 1814. Of his numerous writings, many relate to education, and contain, among other subjects, directions for an education conformable to nature; others relate to the purification of the German language. He also published, in 1804, a collection of poems in the Lower Saxon dialect, in order to show its harmonious character. But his chief work is Introduction to the general Language of Germany, to facilitate the Knowledge and Correction of at least 50,000 incorrectly formed German Words, and to save the Learner from a great Loss of Time and Money (1812). By ascertaining the roots of German words, he strove to determine their correct form, and to remove unnecessary letters, as well as those words which have been adopted from foreign languages into the German. This work is the fruit of long study, and contains much that is valuable, though the public may differ from him on many points. It is a book of much interest to the etymologist. His books for children, written in his new-fashioned language, could not well become useful. He died in Berlin, in 1825.

WOLLASTON, William, an eminent writer on ethics and theology, was born at Cotton Clanford, in Staffordshire, in 1659. He studied at Sidney college, Cambridge, and entered into holy orders. In 1688, the death of a relation put him in possession of considerable landed property, when he removed to London, and resided in Charterhouse square. His marriage, shortly after, with a lady of considerable fortune, having rendered him independent, he devoted his time to literary researches. His work, entitled the Religion of Nature delineated, procured the writer a distinguished station among the philosophers of the last century. His death took place in 1724.

WOLLASTON, William Hyde, M. D. and F. R. S., a distinguished chemist, was born in 1766; died Dec. 22, 1828. Having received his academical education at Cambridge, he proceeded M. D. in 1793, and attempted to practise as a physician at Bury St Edmunds, but with so little success, that he left the place in disgust, and removed to London. Soon after his arrival in that city, he became candidate for a place of physician to St George's hospital; but, failing in his attempt, he declared his determination never again to write a prescription, and turned his whole attention to the cultivation of natural science. Though almost every branch of science, at different times, occupied his attention, chemistry was that to which he seems to have been most ardently devoted; and it was by his investigations in that department of philosophy that he attained the most distinguished reputation. He was accustomed to pursue his chemical examinations on the smallest specimens of the substance which he was analysing; and he invented an ingenious method of determining the properties and constituents of very minute quantities of matter. He was endowed with bodily senses of extraordinary acuteness and accuracy, as well as with great general vigour of understanding, and had acquired a powerful command over his attention, and habituated himself to the most rigid correctness of thought and language. Among his inventions are his sliding rule, or scale of chemical equivalents (see *Equivalents, Chemical*); the goniometer, or instrument for measuring the angles of crystals; the camera lucida, &c.; and we are indebted to him for the discovery of two new metals, palladium and rhodium (see the articles), and of the malleability of platina. Doctor Wollaston was the author of a great number of communications to the Transactions of the Royal Society, of which he was a member, and of several articles in doctor Thomson's Annals of Philosophy, and other periodical works.

WOLLASTONITE. See *Tabular Spar.*

WOLLNER, John Christian von; notorious in the ignominious government of Frederic William II. of Prussia, the successor to Frederic the Great. He was the son of a clergyman, was born in 1727, studied theology in Halle, became minister in a village near Berlin, in 1759; was appointed counsellor of finance to prince Henry of Prussia, as he had shown some knowledge of political economy, made a noble in 1786 by the above-mentioned king, and, after receiving several appointments, became minister of state in 1788. In this situation, he exercised the greatest influence over the weak-minded monarch, by winking at his debaucheries, and resorting to low arts, such as frightening him with pretended apparitions. He caused the king to issue the notorious "religious edict," which established intolerance and mysticism, so contrary to the spirit of the time, and particularly of the monarchy. The present king Frederic William III. repealed this edict as soon as he ascended the throne, and dismissed this narrow-minded minister, who died in 1800, on one of his estates in Brandenburg. Wöllner was a member of several secret societies, including the Rosicrusians.

WOLODOMIR. See *Wladimir.*

WOLSEY, Thomas, cardinal, an eminent minister of state under Henry VIII., is said to have been the son of a butcher at Ipswich, where he was born in 1471. After receiving a grammatical education, he was sent to Magdalen college, Oxford, of which he was elected fellow. Being appointed master of a grammar-school dependent on the college, he had three sons of the marquis of Dorset under his care—a circumstance which induced that nobleman to present him with the living of Limmington, in Somersetshire, and, while here, he was put in the stocks in consequence of a drunken frolic. Although his conduct was by no means regular, his manners and appearance recommended him to Dean, archbishop of Canterbury, who made him his domestic chaplain. On the death of that prelate, he served Sir John Nanfan, governor of Calais, in the same capacity, by which patron he was recommended to Henry VII., who made him one of his own chaplains; and, in consequence of his able and expeditious conveyance of a despatch to the emperor at Bruges, he was rewarded with the deanery of Lincoln. On the death of Henry VII., he was introduced by Fox, bishop of Winchester, to Henry VIII., whose favour he courted so successfully, that he shortly obtained the first place in the royal favour, and became uncontrolled minister. His progress in advancement was very rapid. In 1510, he was introduced into the privy-council, made reporter of the star-chamber, registrar, and afterwards chancellor of the garter. Ecclesiastical preferments were also heaped upon him, of which the principal were the bishoprics of Tournay and Lincoln, in 1513, and the archbishopric of York in 1514. The following year, the pope, to ingratiate himself with Henry, elevated him to the dignity of cardinal. His nomination to be the pope's legate *a latere* completed his ecclesiastical dignities, by exalting him above the archbishop of Canterbury. Naturally proud and ostentatious, no English subject, either lay or ecclesiastic, ever took so much state upon himself. He entertained a train of eight hundred servants, many of whom were knights and gentlemen. In 1515, archbishop Warham, whom he had much annoyed by his ambition, resigned the office of chancellor, to which Wolsey was appointed; and his administration in that capacity did him much credit. His legatine power, on the contrary, was exercised with great severity and oppression, and his eagerness for acquirement was unbounded. At the time when the celebrated rivalry between the emperor Charles V. and Francis I. rendered the friendship of Henry of great importance, Wolsey was treated with the greatest respect by both sovereigns, receiving pensions from each, as well as a third from the pope. He ultimately, however, favoured the side of Charles, who settled upon him the revenues of two bishoprics in Spain, and flattered him with hopes of the papal chair, which induced him to involve Henry in a war with France. Insatiable in the pursuit of ecclesiastical emolument, in 1519, he obtained the administration of the see of Bath and Wells, and the temporalities of the abbey of St Alban's, and afterwards enjoyed, in succession, the rich bishoprics of Durham and Winchester. By these means, his revenues nearly equalled those of the crown, part of which he expended in pomp and ostentation, and part in laudable munificence for the advancement of learning. He founded several lectures at Oxford, where he also erected the celebrated college of Christ-church. He also founded a collegiate school at Ipswich, and built a palace at Hampton court, which he presented to the king; but much of this was done by the seizure of minor religious establishments, for which he obtained papal authority. The critical affair of the divorce of queen Catharine was one of the first steps to his fall, as he was thought by the king to assist the delays of the court of Rome. The attachment of Henry to Anne Boleyn still further involved him; and, at length, in 1529, the dukes of Norfolk and Suffolk were sent to require the great seal from him, and he was ordered to quit York place, his palace in London, and retire to Esher, all his rich plate and furniture being seized in the king's name. After some suspense, owing to some remnant of attachment on the part of Henry, articles of impeachment were exhibited against him in parliament; but he was defended so vigorously by his retainer Cromwell, that they were withdrawn. His enemies then indicted him, under the statute of provisoes, for procuring bulls from Rome, which was made the grounds of a sentence of forfeiture. After the intended effect was produced of making him resign York palace and its riches to the king, he was granted a full pardon, and part of his revenues. In 1530, he was ordered to remove to his diocese of York, where he passed part of the year at his mansion at Cawood, until once more, on the first of November, in the same year, he was arrested for high treason, and set out under custody, fo London. Indisposition of body, however, combin ing with mental distress, he was obliged to stop a Leicester, where he was honourably received at th abbey. His disorder increasing, a few days brough him to his end, on the 28th of November, 1530, a the sixtieth year of his age. Shortly before hi decease, he exclaimed to the officer appointed t conduct him, "Had I but served God as diligentl as I have served my king, he would not have give me over in my gray hairs." There has been considerable disposition in later writers to vindicat the character of this minister; and it must not b forgotten that, in the reign of Henry VIII., wh had basely murdered him, of Mary, the daughter o the much injured Catharine, and of Elizabet whose mother (Anne Boleyn) was the chief instrument of his downfall, no justice could be expected to be rendered to the better traits of hi mixed character. If he was loose in his moral grasping in his ambition, and rapacious, he was liberal, and even profuse, towards his dependent and in his patronage of letters. He was enlightened far beyond the period in which he lived, an not only by fostering learning, but by causing man reforms to be made in the church, he prepared th way for that more extensive, though imperfe measure of reformation which took place in England after his death. As a diplomatist, it is difficult to say whether his abilities or industry was th most remarkable. To him England is indebted fo the first notion of a vigorous police, and for a regular system in the administration of justice; and in justice to his memory, it should be observe that, while his influence prevailed with Henr VIII., the ferocity of that royal butcher was kep in check. We have a Life of Wolsey by his gentleman usher Cavendish (new editions, with no by Singer, 1827), and an account of the Life an Administration of Cardinal Wolsey, by Galt (18 4to., and 1817, 8vo.)

WOLSTONECRAFT, Mary. See *Godw* *Mary*.

WOLTMANN, Charles Louis von, was bo at Oldenburg, in 1770, and died in Prague, in 1 He has written many books. His History of th Peace of Westphalia is a work of great merit, a far superior to his other productions.

WOLVERHAMPTON; a borough and mark town of England, in the county of Stafford, miles south of Stafford, and 123 north-west of London. It is said to have derived its name from *Wu frana*, wife of the duke of Northampton, who fo a monastery here in 996; whence its name *Hampton* was changed to *Wulfrun's Hampton*, an corrupted into *Wolverhampton*. The town, wh stands on an eminence, consists of several stree diverging from the market-place, in the centre which is a cast-iron pillar, forty-five feet high, supporting a gas lantern; it is irregularly paved, b well lighted with gas; and the houses are in general substantial and well built. It contains a ne theatre, and a public subscription library, ov which is a suite of rooms in which assemblies a concerts take place. Races are held annually August, and are well attended. In the year 15 the greater part of the town was destroyed by fire, which continued burning during five da This town has been long celebrated for the manufacture of locks, which is carried on to a great extent, together with files, nails, screws, gun-lock hinges, steel-mills, machinery, and furnishing ir mongery, with every branch of the iron trade; and brass, tin, Pont-y-Pool and japanned wares in great variety: it has also a large chemical laboratory. Many of the farmers in the neighbourbood are said to have their forges, where they work when not employed in the field. The Staffordshire and Worcestershire, the Birmingham, and the Essington and Wyrley Canals, pass close to the town, and form a union about a mile towards the north, by means of which a communication is opened with every part of the kingdom. By the reform act of 1832, it was constituted, with Sedgeley, a borough, returning two members to parliament. Population, in 1831, 48,080; with Sedgeley, 67,508.

WOMAN. Among savages, a slave, in the harem of the luxurious, but half-civilized East, a voluptuous toy, in the more refined countries of Christendom alone is woman the equal and companion of man. It is in the Christian home only that woman reigns—the mother, sister, wife and friend. It is a common remark that, in proportion as civilization advances, the respect and attention paid to the weaker sex are increased. In the savage state, the woman nurses her young, prepares the food, and carries the burdens of her master, whom she follows to war and the chase, shares all the privations and hardships of his precarious life, without participating in its excitements and pleasures, and serves and suffers without being thanked, rewarded or pitied. In a more advanced stage of society, as in ancient Egypt and India, the condition of woman, in private life, is that of an humble dependant, respected as a mother, but entirely subject to the will of the husband, and, in the higher castes, required to sacrifice herself upon his tomb. In China, the women of the lower classes are allowed to appear in public without restraint; but all the hard labour is put upon them, while the husband does the lighter work; the wife drags the plough, and the husband sows the seed. In the higher classes, the sex is subjected to a seclusion amounting almost to imprisonment. The temples are the only places to which they have free access. Elsewhere, they are not permitted to lose sight of their inherent inferiority: inhabiting a distinct set of apartments, not permitted to take their meals at the same table as their husbands, receiving no intellectual instruction, the degradation imposed (as is supposed) by nature is perpetuated by these laws which repress all their energies of mind and heart. With the two most polished and interesting nations of the ancient world, the female sex was on a very different footing, but in both less highly respected and less justly estimated, than with the polished nations of modern times. Greece, situated on the borders of Asia, then the seat of civilization, presents a singular mixture of Oriental manners with European institutions and habits. The condition of the Grecian women accordingly resembles this general condition of society, in a union of something of Eastern restraint and seclusion, with somewhat of the moral virtues and brilliant qualities of Western civilization. Among the Greeks, we find some noble examples of womanly heroism, of conjugal love, and sisterly affection, but nothing of that spiritualized respect for the female sex which prevailed in the middle ages, and nothing of that spirit of gallantry which characterized more modern times. Woman was not, in Greece, the ornament and refiner of society, the companion and friend of man. Homer represents women simple, noble and virtuous; Sophocles gives them something of a heroic cast; and, in Euripides, we find some models of female purity and lofty devotion: but no where do we discover that adoration of female beauty which is expressed in modern poetry. (See Schlegel, *Upon the Representation of the Female Character in the Greek Poets.*) The Grecian women were secluded in their own apartments, and passed their time chiefly in directing the labours of their female slaves. They rarely or never appeared in the company of the men; and this separation was carried so far that the Grecian houses were usually divided into two parts, in which the two sexes had distinct mansions assigned them. The part assigned for the women, the *gyneceon*, or *gyneconitis*, was the farthest from the street, and usually in the uppermost rooms. The unmarried women were subjected to particular restrictions, and were almost entirely confined at home. When the women went abroad, or appeared in public, they covered their faces with veils, and were generally accompanied by attendants. They were not permitted to appear at the theatre, unless at the representation of tragedies; but they formed religious processions, and took part in religious festivals. The want of cultivated females of virtue was supplied by the *hetæræ*, who were often highly distinguished for their talents and accomplishments. (See *Hetæra.*) Among the celebrated women of this class are Aspasia, the mistress of Pericles, Lais, Phryne, and others. (See Böttiger's *History of the Female Sex*, in the 2d and 3d volumes of the *Attisches Museum.*) The Lacedæmonian women observed fashions quite different from their neighbours: their virgins went abroad barefaced, while the married women covered themselves with veils; the former designing to get husbands, the latter aiming to keep those they had. The Spartan maidens, says Plutarch (Life of Lycurgus), exercised themselves in running, wrestling, throwing quoits, casting darts, that they might be more healthy and vigorous: and they were also accustomed to dance naked at solemn feasts and sacrifices. When, however, the laws of Lycurgus were neglected, and the Spartans degenerated from the strict virtue of their forefathers, these practices contributed to render the prevailing licentiousness more universal. The Romans were, in many respects, in advance of their more polished neighbours in the treatment of their women. The Roman women appeared more in society: they were allowed to be present at feasts and entertainments, and at public spectacles, and, in general, associated more with men than the Grecian women. They took a more active part in public matters; and the institution of the vestal virgins has no example in the manners of the Greeks. Hence we find many models of true feminine greatness among the Roman women. In the period of the republic, they lived, however, considerably retired, occupied with domestic labours, and the education of their children, and distinguished for simplicity of appearance and rigid virtue. But with the increase of wealth, luxury and corruption, a great change took place; and, if Cornelia may be considered the representative of free and virtuous Rome, Messalina must be regarded as the emblem of the polluted epoch of the empire. The influence of Christianity gave woman a new station in society, broke her chains, and released her from the odious and degrading restrictions in which she had almost become the soulless thing which she had been represented to be. As man ceased to be a mere citizen of his own country, and felt himself to be a citizen of the world, so woman was restored to her natural rights Other causes co-operated with the spirit of Christianity to establish a just and true equality of the sexes. The German or Teutonic nations were the first who led the way in this revolution; and Tacitus remarked upon the estimation in which the female sex was held among them. The age of chivalry shows the effect of these two influences, mutually contributing to each other's developement; and the whole of Europe soon experienced the operation of these causes. In fact, the very peculiarities of the Christian religion, its spirit of love, of tenderness, and of charity, wholly unknown to the ancient nations, led to a submission of physical force and intellectual vigour, to feelings of kindness and affection. "In every age and country," says Gibbon, "the wiser, or at least, the stronger, of the two sexes has usurped the powers of the state, and confined the other to the cares and pleasures of domestic life. In hereditary monarchies, however, and especially in those of modern Europe, the gallant spirit of chivalry, and the law of succession, have accustomed us to allow a singular exception; and a woman is often acknowledged the absolute sovereign of a great kingdom, in which she would be deemed incapable of exercising the smallest employment, civil or military. But as the Roman emperors were still considered as the generals and magistrates of the republic, their wives and mothers, although distinguished by the name of Augusta, were never associated to their personal honours; and a female reign would have appeared an inexpiable prodigy in the eyes of those primitive Romans who married without love, or loved without delicacy and respect." The exaggerated spirit of adulation which prevailed in the age of chivalry, was yet far from giving the female sex its true position; and the age of frivolous gallantry which succeeded it, was a natural result of the former. It is by observing a proper medium between servitude and deification, by treating the sex as women and not as slaves or goddesses, by cultivating their minds and hearts, as well as by adorning them with the graceful accomplishments, that our own times have, in some measure, restored this part of our race to their rights and duties. Consult on this subject, Alexander's *History of Women* (2 vols., 4to., 1779); and Ségur, *Les Femmes* (3 vols., 1802); see, also, our articles *Husband and Wife*, *Marriage*, *Polygamy*, and *Divorce*.

Woman, in physiology. Besides the difference of the sexual organs, the woman exhibits other peculiar characters, which distinguish the sexes. In the female, the head is smaller, the chest narrower, the pelvis broader, the limbs more delicately formed and more rounded, and the gait peculiar, on account of the breadth of the pelvis. The skin is soft, the hair of the head finer and longer, the muscular system little developed, the voice an octave higher than that of the male, and the nervous system predominating: their sensibility is consequently greater than that of the other sex. The rounded form and brilliant whiteness which characterize females, are owing to the peculiarity of their lymphatic and cellular systems; and, their sanguineous system being less vigorous than in man, they are less liable to acute inflammations. Born to feel and to inspire the kind and tender affections, they are exempt from the gloomy and fierce passions which characterize the bilious temperament; and love, jealousy, and maternal affection, are the deepest springs of emotion in the female heart. Their delicate and peculiar organization modifies the general course disease with them, and renders them liable to some from which the other sex is exempt. The period puberty is more often attended by disease in the female sex. It is characterized by the developement of the breasts, and other physical changes, together with a general revolution in the tastes and feelings of the individual. (See *Puberty*, and *Catamenia*.) Ripe for the burden of maternity, the woman becomes a mother only through sufferings and pangs. The mother is exposed to yet new maladies as nurse; and, when nature calls the child to other sources of nourishment (see *Weaning*), to new cares and precautions for herself and her infant. Having passed these successive periods of life, at the age of forty-five or fifty, another change of the system succeeds, attended with so many dangers, that this epoch has received the name of the "critical age." The physical changes which now take place are often accompanied with an unfavourable moral change, and both combine to render more dangerous the maladies to which this period is particularly liable. Great care should now be taken to be warmly clothed, to avoid violent excitements, to enjoy pure and wholesome air; and, this period passed, the health becomes confirmed, and life is often prolonged to an advanced age.

WOMB. See *Uterus*.

WONDERS OF THE WORLD, SEVEN. See *Seven Wonders*.

WOOD. (For the structure of wood, see the article *Plants*; for the use of wood as fuel see *Fuel*.) We shall now give the character of some of the principal sorts of wood used in the arts. The part preceding the account of the fancy woods is abridged from Bigelow's Technology.

Oaks are generally distinguished for great strength, but are coarse-grained and prone to warp and crack, under changes from moisture to dryness. The oak is prized in ship building beyond any native timber. The white oak (*quercus alba*) is employed for the keels, side-timbers, and planks of vessels, also for frames of houses, mills, and much work requiring strength; for wagons, parts of carriages, ploughs, and other agricultural instruments. Large quantities are consumed for the staves and hoops of casks, for which they furnish one of the best materials. The bark of the black oak (*quercus tinctoria*) furnishes the *quercitron* used by dyers. Most of the species of oak are employed in tanning, and they all furnish a valuable fuel.

Hickory, or *Walnut*. The wood of the different species of walnut or hickory (*juglans*, or *carya* eminently distinguished for weight, tenacity, and strength. It has, however, important defects warps and shrinks greatly, decays rapidly when exposed to the weather, and is very liable to the attacks of worms. On these accounts, it is never used for house or ship building, but is chiefly employed for minor purposes, where strength is the chief requisite, as in the teeth of mill-wheels, screws of presses, handspikes, capstan bars, bows, hoops, and handles of tools. As fuel, the hickory commands a higher price than any other wood.

Ash. The white ash (*fraxinus Americana*), and some other species, are of great utility in the arts. Ash wood is strong, elastic, tough and light, and splits with a straight grain. It is also durable and permanent in its dimensions. It furnishes the common timber used in light carriages, for the shafts, frames, springs and part of the wheels. Flat hoops, boxes, and the handles of many instruments made of it. It is almost the only material of oars, blocks of pulleys, cleats, and similar naval implements in places where it can be obtained.

Elm. The common American elm (*ulmus Americana*) is valued for the toughness of its wood, which does not readily split. On this account, it is chiefly used for the naves of carriage wheels.

Locust. The common locust (*robinia pseudacacia*) is one of the hardest, strongest, and most valuable of American native trees. The larger pieces of its timber are used in ship-building, and the smaller pieces are in great request to form the treenails or pins which confine the planks to the timbers. Locust wood is exceedingly durable, when exposed to the weather, and forms excellent fuel.

Wild cherry-tree. The wood of this tree (*prunus Virginiana*) is of a deep colour, hard, durable, and, when properly seasoned, very permanent in its shape and dimensions. In the manufacture of cabinet work, it is sometimes used as a cheap substitute for mahogany.

Beech. The wood of the red beech (*fagus ferruginea*) is liable to decay when exposed to alternate moisture and dryness. It does not, however, readily warp, and, being smooth-grained, it is used for some minor purposes, such as the making of planes, lasts and card-backs. It forms a very good fuel.

Bass-wood. The American linden or bass-wood-tree (*tilia Americana*) produces a fine-grained wood, which is very white, soft, light and flexible. It is sometimes employed for furniture, but its chief use is to form the panels of coach and chaise bodies, for which its flexibility makes it well suited.

Tulip-tree (*liriodendron tulipifera*). The boards of this tree are sold under the name of *white-wood*, and erroneously under that of *poplar*. Its wood is smooth, fine-grained, easily wrought, and not apt to split. It is used for carving and ornamental work, and for some kinds of furniture.

Maple. The rock maple (*acer saccharinum*), and several other species, afford wood which is smooth, compact and hard. It is much used for cabinet furniture, and is a common material for gun-stocks. The wood in some of the old trunks is full of minute irregularities, like knots. These, if cut in one direction, exhibit a spotted surface, to which the name of *bird's eye* maple is given; while, if cut in another direction, they produce a wavy or shaded surface, called *curled* maple. This last effect, however, is more frequently produced by a mere serpentine direction of the fibres. The distinctness of the grain may be increased by rubbing the surface with diluted sulphuric acid. Maple wood forms a good fuel. It is not very lasting when exposed to the weather. The sap of the rock maple, and of one or two other species, yields sugar on being boiled.

Birch. The white or paper birch (*betula papyrifera*) has properties similar to those of the maple, and is appropriated to the same uses. Its cuticle or outer bark is made, by the Indians, into canoes. The lesser white birch (*B. populifolia*) is a perishable tree of little value. The black birch (*B. lenta*), known for its aromatic bark, affords a firm, compact, dark-coloured wood, much valued for furniture, and sometimes used for screws and implements requiring strength. The yellow birch (*B. lutea*) is applied to the same uses as the last, and makes good fuel.

Pine. The pines exceed all native trees for the value and variety of their uses. The white pine (*pinus strobus*) has a very tall, straight trunk, the wood of which is light, soft, homogeneous, and easy to work. It is remarkably exempt from the common fault of timber—that of decaying in the open air, and of changing its dimensions with changes of weather. On these accounts, it is extensively employed for most of the common purposes of timber. The pitch pine (*pinus palustris*, L.) yields vast quantities of tar and turpentine. Its wood is appropriated to the same objects as that of the white pine, but is harder and stronger, and therefore preferred for planks, spars, floors, decks, &c. Many other species of pine exist, partaking qualities like those already described, but most of them harder than the white pine.

Spruce. The black and white spruce belong to the race of trees commonly called *firs*. They are both valuable, but the black spruce (*pinus nigra*) unites, in a peculiar degree, the qualities of strength, elasticity and lightness, together with the power of resisting exposure to the weather. It is much sought after for the smaller spars of vessels, such as the booms, yards, and topmasts.

Hemlock. The hemlock-tree (*pinus Canadensis*) is inferior to the other firs in quality, though it grows to a large size. It is coarse-grained, often twisted, and cracks and shivers with age. It furnishes an inferior sort of boards, used in covering houses. Its bark is valuable in tanning.

White cedar. This tree (*cupressus thuyoides*) occupies large tracts denominated *cedar swamps*. The wood is soft, smooth, of an aromatic smell, and internally of a red colour. It is permanent in shape, and very durable, and esteemed as a material for fences. Large quantities of shingles are made of it. It is a favourite material for wooden wares, or the nicer kinds of coopers' work.

Larch. The larch (*pinus microcarpa*) wood is strong, elastic and durable, and is highly prized, in places where a sufficient quantity can be obtained, for naval and civil architecture.

Willow. The most common kinds of salix or willow is soft, light and spongy. Willow charcoal is used in the manufacture of gunpowder. The osier, and some other species, with long slender shoots, are extensively cultivated to form wicker work, such as baskets, hampers, and the external coverings of heavy glass vessels.

Mahogany. In the manufacture of cabinet furniture, mahogany (*swietenia mahagoni*) has taken precedence of all other kinds of wood. Its value depends not so much on its colour as on its hardness, and the invaluable property of remaining constant in its dimensions, without warping or cracking, for an indefinite length of time. The same qualities which render it suitable for furniture have given rise to its employment for the frames of philosophical instruments, and of delicate machinery. Mahogany is imported from the West Indies and different parts of Spanish America.

Box-wood. The box-tree (*buxus sempervirens*) wood is of a well-known yellowish colour, hard, compact, smooth, tough, and not liable to crack. Musical and wind instruments are commonly made of it; also mathematical measuring instruments. The handles of many tools, and various articles of turners' work, consist also of this material. Wood engravings are cut upon the end of the grain of box-wood.

Lignum vitæ. The wood of the *guaiacum officinale* is employed in the arts under this name. It is dark-coloured at the heart, strong, exceedingly hard, and so heavy as to sink in water. It is impregnated with resin, and, on this account, durable in liquids. Handles of tools, boxes of gudgeons, wheels of pulleys, castors, balls, stopcocks, mallets, &c., are made of it. It is imported from the West Indies and South America.

We shall now give an account of some of the principal woods used in cabinet work, taken from the Library of Entertaining Knowledge.

Fancy Woods. Even at a comparatively early stage of the arts, mankind appear to have made use of the bright or variegated colours of wood, to give beauty both to their dwellings and their furniture. The temple built by king Solomon was overlaid, on the inside, with boards of cedar—"all was cedar; there was no stone seen"—and, among the most ancient specimens of ornamental furniture that are to be met with, we find that attempts have been made to heighten the effect by the contrast of various kinds of wood. Though, both in the materials and the designs, these are inferior to the productions of modern art, many of the cabinets which are still preserved have much higher claims to notice than their mere antiquity. In all these works, a veneer, or thin plate of the fancy wood, is laid down in glue upon a surface of a plainer description. This process is, of course, cheaper than if the whole work were made of the solid fancy wood. The beauty of fancy wood arises, in many sorts, from its being cross-grained, or presenting the fibres endways or obliquely to the surface. These different positions of the fibres, as well as their different colours in grained woods, give a clouded and mottled variety to the surface; and, when some of the parts are partially transparent, as in the case with fine mahogany, the surface gives out a play of different tints, as the observer shifts his place, or the light falls upon them, and, consequently, is reflected at different angles. When mahogany was first introduced as a cabinet timber, it seems to have been in the dark-coloured, hard, and straight-grained trees, which are now used for chairs and other articles, in which the solid timber is preferred; and on that account, mahogany was not much used in combination with other woods. When, however, its great value was known—the ease with which it can be cut, the improvement that varnish gives to its colours, the firmness with which it holds in glue, and the improvement which, when properly taken care of, it gains in time—it was found that good mahogany was much too valuable a timber for being used solid, and it began to be employed as the staple timber in veneering. Other foreign woods, some of them lighter and others darker, were employed for borders and ornaments; but mahogany was used for the body of the work; and when it came to be so used, a great revolution was effected in the art of cabinet-making. On the first introduction of mahogany, the same process was resorted to, that had before been practised with the walnut and other woods, and effect was sought to be produced by quartering panels, forming them of gyrony* of sectors, with the grain in opposite directions, and other fantastic and unnatural arrangements; but, in course of time, a better taste was introduced, and the object was to make the whole surface have the same appearance as if the work had been made solid out of the rich timber. This was one step towards the attainment of a purer style; but the continuity of the surface was still interrupted by ill-sorted additions. Th breadth of the mahogany, which would in have been beautiful, was broken by bands a strings of other wood, without much regard to harmony of the colours; and thus that which, w the veneer alone, would have been chaste a classical, was reduced to a piece of patch-wor The veneering, whether done in mahogany or a other wood, was, at first, very expensive. T veneers were cut by the hand; and thus the p cut off was of unequal thickness in different par the wood was mangled by the operation of cut and the finest pieces, which, as has been said, a cross-grained, or have the fibres across their thic ness were always in danger of being broken. had been found that veneers, laid upon good bed of timber, whether of the more coarse mahogan or of any other kind, were better, in point both beauty and of standing without warping, than sol timber; but the cutting of the veneers by the ha was very laborious, and wasted the timber, so tha though the plan was a good one, it was expensi When the harder and more unmanageable speci of fancy woods came to be used, the difficulty a expense were further increased; and though mo beauty and variety were imparted to cabinet fur ture, they were imparted at a corresponding i crease of expense. Nor was it till the invention machinery for the cutting of wood into veneers, b Mr Brunel, that we had the full advantage of th beautiful art of veneering. The machinery us for this purpose consists of circular saws, driven b mechanical power; and they have so diminished the price of cutting veneers that the saving is im mense. The quantity of veneer that can, by mean of these machines, be sawed out of a given quanti of timber, is astonishing. Those who are reckon respectable cabinet-makers do not, in general, wi to have more than eight or nine thicknesses out the inch; but those who manufacture furniture f occasional sale, and are, in consequence, indiffere as to the quality of the timber, and the durabilit of their work, often have the inch cut into fifte or sixteen thicknesses. Veneering in fancy wood has sometimes been compared to gilding and pla ing; but the process does not gain by the compari son, as the covering of one wood with another i much nearer approach to solidity than the coveri of one metal with another While the cabin article is kept in such a state that the glue is n dissolved, the covering of beautiful wood does n wear out; and thus, with a vast saving in the mo costly material, there is the same durability as nothing but that material had been used for t whole. There is another advantage in the use fancy woods on the surface—the body of the artic upon which the fancy wood is laid can be mu better put together than if it had formed the e ternal part of the article. Where that is the cas dovetails, or mortises, cannot be wedged withou an external seam; but, in veneering, the body the article can be put together with every degr of care and strength, and the veneer will hide t whole.

Mahogany is of universal use for furniture, fr the common tables of a village inn to the splend cabinets of a regal palace. But the general ado tion of this wood renders a nice selection necess for those articles which are costly and fashionab The extensive manufacture of piano-fortes h much increased the demand for mahogany. Spani mahogany is decidedly the most beautiful; but occasionally, yet not very often, the Honduras wood is of singular brilliancy; and it is then eagerly sought for, to be employed in the most expensive cabinet work. A short time ago, Messrs Broadwood, distinguished English makers of piano-fortes, gave the enormous sum of £3000 for three logs of mahogany. These logs, the produce of one tree, were each about fifteen feet long, and thirty-eight inches wide. They were cut into veneers of eight to an inch. A new species of mahogany has been lately introduced in cabinet work, which is commonly called *Gambia*. As its name imports, it comes from Africa. It is of a beautiful colour, but does not retain it so long as the Spanish and Honduras woods.

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* A term of heraldry, in which a shield is formed in sectors from the centre.

The wood most in use for cabinet work, next to mahogany, is *rose-wood*. The name of this species of wood is derived from its fragrance; and it has long been known to the cabinet-makers of England and France. It was first introduced, it is said, from the isle of Cyprus; though the great supply now comes from Brazil. The width of the logs imported into England averages twenty-two inches, so that it must be the produce of a considerable tree. The more distinct the darker parts are from the purple-red, which forms the ground, the more is the wood esteemed. It is ordinarily cut into veneers of nine to an inch, and is employed, in this way, for all the larger furniture, such as tables, but solid for the legs of chairs, tables and cabinets.

King-wood is generally used for small cabinet works, and for borderings to those which are larger. It is extremely hard. The tree which produces it is small, as the sticks are seldom brought to England more than five inches wide, and four feet long. Its colour is of a chocolate ground, with black veins, sometimes running into the finest lines, and at others, more spread over the ground, as in rose-wood. The botanical name of the tree which produces this wood is not known. It comes from Brazil. And here we should remark the exceedingly imperfect state of our knowledge with regard to the species of trees which produce the fancy woods, so extensively used in cabinet work. The attention of botanists who have described the productions of South America and Australasia, from which these fine woods come, has not been directed to this point: and the commercial dealers in these woods have paid no regard to it.

Beef-wood, principally used in forming borders to work, in which the larger woods are employed, is extremely hard and extremely heavy. Its colour is a pale red, not so clouded as mahogany. The timber arrives in England in logs of about nine feet long, by thirteen or fourteen inches wide. The tree which produces it is not known in botanical description, but it is a native of New Holland.

Tulip-wood would appear to be the produce of a tree little exceeding the character of a shrub; for it arrives in sticks of about five inches diameter, seldom more than four feet in length. It is very hard, and of a clouded red and yellow colour. Its principal use is in bordering, though it is employed in smaller articles, such as caddies and ladies' work tables.

Zebra-wood is the produce of a large tree, and is imported in logs of two feet wide. It is a cheap wood, and is employed in large work, as tables. The colour is somewhat gaudy, being composed of brown, on a white ground, clouded with black, and each strongly contrasted, as its name imports, derived, as it is, from the colours of the Zebra.

Coromandel-wood is used in large works, like zebra and rose-wood. It is inferior to rose-wood in the brilliancy and division of its colours, having a dingy ground, and sometimes running into white streaks. The tree which produces it is of a large size.

Satin-wood is well known for its brilliant yellow colour, with delicate glowing shades. It is now not much used in cabinet work. The timber arrives in logs two feet wide, and seven or eight feet long.

Sandal-wood is of a light-brown colour, with brilliant waves of a golden hue, not unlike the finest Honduras mahogany. It is about the same size as satin-wood.

Amboyna-wood is now very much used in cabinet work. It is of various colours, and the shades are generally small. It arrives in logs of two feet wide.

Snake-wood is extremely hard, of a deep-red colour, with black shades. It is principally used for bordering and small work.

Hare-wood something resembles satin-wood in the arrangement of its waves, but its colour is different, being of a light-brown ground.

Botany bay oak forms very beautiful furniture. The ground is a uniform brown, with large dark blotches.

Ebony is also much used. Of the several cabinet-makers' woods bearing this name, there are the African cliff ebony, which is black, with a white spot; and the spotted ebony, a very beautiful wood, and extremely hard, (more so than the common ebony), of which the ground is black, with brown and yellow spots.

Acker-wood is the produce of a large tree, and is of a cinnamon colour.

Canary-wood is of a golden yellow.

Purple-wood, which has been lately introduced, is of a purple colour, without veins. This appears to be the produce of a thorn of tropical countries, being only four inches wide. These three woods have been little used in furniture, but have been lately employed in mosaic floors.

Bird's-eye maple (its appearance is described in its name), which has also been so employed, is a narrow and long wood.

Calamander-wood. There is a very beautiful wood of this name growing in the island of Ceylon. The wood is very hard and heavy, and of singularly remarkable variety and admixture of colours. It is very difficult to describe this; nay, impossible to convey to those who have not seen it an idea of the manner in which the shades run into one another. The most prevailing of these is a fine chocolate colour, now deepening almost into absolute black, now fading into a medium between fawn and cream colours. In some places, however, the latter tint is placed in more striking, though never quite in sudden, contrast with the richest shades of the brown. The variations are sometimes displayed in clustering mottles, sometimes in the most graceful streaks. There is not, however, any thing in the least gaudy or fantastic in the general result. It certainly arrests the eye, but it is from the rich beauty of the intermingled colours, not from any undue showiness. This wood takes a very high polish. It is wrought into chairs, and particularly into tables, and even large folding-doors have been made of it.

Partridge, *leopard*, and *porcupine* woods are very rarely used. Their names are derived from a supposed similarity of their colours to those of the animals whose denominations they bear.

WOOD, Anthony, an eminent English antiquary and biographer, born at Oxford, in 1632, entered of Merton college, Oxford, in 1647. Having graduated M. A., he set himself to transcribe the monumental inscriptions and arms of the parishes of Oxford, and, in 1660, obtained permission to consult the registers and other records of the university in the Schools' Tower. These researches, added to others in the Tower of London and the Cotton library, produced the materials for his History and Antiquities of the University of Oxford. The copy of this work, which he had compiled with greater industry than skill, was purchased of him by the university for 100 pounds. It was written in English; but as it was thought proper that it should appear in Latin for the information of foreigners, it was translated into that language, under the inspection of doctor Fell, and published at the Oxford press, under the title of *Historia et Antiquitates Universitatis Oxoniensis* (2 vols., folio.) Of this version he often complained, as exhibiting various mistakes and omissions. In 1691, appeared his more popular and important work, *Athenæ Oxonienses*, or an account in English, of almost all the writers educated at Oxford, and many of those at the university of Cambridge. A prosecution was soon after instituted against him in the vice-chancellor's court, for an imputation, in this work, affecting the character of the deceased earl of Clarendon; and he was sentenced to expulsion until he should formally recant it. His work affords valuable materials for biography. He died in 1695, and left his books and papers to the university of Oxford. A third edition of his *Athenæ Oxonienses*, corrected from the author's manuscripts, and continued, appeared under the superintendence of doctor Bliss (1813—1817, 3 vols., 4to.)

WOOD, Robert, an accomplished scholar and statesman, was born at Riverstown, in the county of Meath, in 1716. In 1751, he made the tour of Greece, Egypt, and Palestine, in company with Bouverie, and Dawkins, and, at his return, published a splendid work in folio, entitled the Ruins of Palmyra, otherwise Tadmor in the Desert (fol., 1753), being an account of the ancient and present state of that place, with fifty-seven elegant engravings; republished in Paris in 1819 (4to.) This was followed by a similar Description of the Ruins of Balbec, with forty-six plates (1757). In 1759, he was appointed under secretary of state by the earl of Chatham, at which time he was preparing for the press his Essay on the Life and Writings of Homer, which did not appear until after his death, which took place at Putney, in 1771. This work has been translated into French, Italian, Spanish and German; the latter by Heyne, with a preliminary essay.

WOOD ENGRAVING. Some account of this may be found in the article *Engraving*; subdivision, *Engraving on Wood*. See also the article *Printing*. We add here, that one of the chief advantages of wood-cuts is, that they may be printed by the same process as common letter-press. In a copperplate, as may be known to most of our readers, the parts which are intended to leave an impression upon the paper are cut into copper, so that, after the ink is spread over the engraving, it has to be rubbed from all the prominent or uncut portion of the surface, in order that it may remain only in these hollows. Several disadvantages result from this. In the first place, the plate is very soon worn, or the fineness of the lines impaired by this continual abrasion.* Secondly, from the method of inking being so different from that which used in printing letter-press, where the parts the type that make the impression, are the prominences and not the hollows, and the ink, therefore, is allowed to remain where it naturally adhere on being applied by the ball or roller, the copper-plate engraving must always be printed by itsel and generally on a separate page from the letter-press. The only way of giving both on the sam page, is to subject the paper to two successive impressions, which, besides the inconvenience of th operation, almost always produces an unpleasan effect from the difference of colour in the two ings, and the difficulty of adjustment. A wood-cut has none of these disadvantages. As the impression is to be made by the prominent parts the wood, these, which receive the ink directl from the roller, are allowed to retain it, just as the case of ordinary types; and there is, therefo nothing of that process of rubbing at every impression, which so soon wears out a copper-plate. Th consequence is, that while rarely more than tw thousand impressions can be taken from a copp engraving before it requires to be retouched. wood-cut will yield, perhaps, fifty thousand. Th the latter, from the manner in which it is to inked, admits of being set up, if necessary, just li any of the other types, in the midst of a comm page, and so of being printed both in the most convenient place, and without any separate proce The block must, of course, for this purpose, made very exactly of the same thickness or he as the other types, along with which it is placed

In a "Book of Trades," published at Frankfort, 1654, which was illustrated by a number of spir wood-cuts from the designs of Jost. Ammon, ther is a representation of the *formschneider* or woo cutter. He sits at a table holding the block in h left hand, upon which he is cutting with a sm graver in his right. Another graver, and a sort googe or chisel lies upon the table. If we ent the work-room of a wood-engraver of the pres day, we shall find the instruments by which he surrounded, nearly as few and as simple. H block rests upon a flat circular leather cushion with sand; and this so completely answers th purpose of holding the block firmly, and yet allowing it to be moved in every direction, that it expressively called the wood-cutter's third han His cutting instruments are of three sorts first, which is called a *graver*, is a lozenge-sha tool, used for outlines and fine tints; the seco called a *scauper*, which presents a triangular p and edges, is used for deeper and bolder wor and the third, which is a *flat tool* or chisel, is employed in cutting away those parts of the blo which are to be left entirely light. There several varieties of size in these tools, but it understood that the best artists employ the few tools. Upon the block, which presents a perfe smooth surface, the design has previously b drawn, in most cases with a black-lead pencil, draughtsman, who is generally an artist dist from the wood-engraver. It is the business of cutter, as we have before mentioned, to leave the lines upon the block which the draughts has traced with his pencil; and to do this, he course cuts away all the parts which form spaces between the various lines of the drawing. The lines thus stand up, as it is called, in relief; and when ink is applied to them by the printer, in the same way as he applies it to his metal types, they transfer the ink to the paper placed over them upon being subjected to an adequate pressure. We should mention that in this, as in every other species of engraving, the drawing upon the wood is a reverse of the object copied, in the same way as a mirror shows the reverse of the human countenance; when the impression is taken from the engraving, the object is correctly represented, in the same way as the reflection of any object in a second mirror placed opposite the first would also give it correctly.

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* Engraving on steel is, in a great measure, free from disadvantage.

The wood which is used for the purpose of engraving, is that of the box-tree. A considerable quantity of box is imported into this country, as the tree with us scarcely ever reaches a sufficient size. The best logs are shipped from Odessa, but very few are adapted for the purpose of the wood-engraver, and the inferior qualities are chiefly used for turnery. The blocks for engraving are cut directly across the grain, so that not many trees furnish pieces sufficiently large for some wood-cuts, and in that case two or even three smaller pieces are fitted together with great exactness. The price of box for engravers has advanced considerably within the last few years, owing to the increased demand.

WOODBINE. See *Honeysuckle*.

WOODBRIDGE; a market-town in the county of Suffolk, seventy-seven north-east by east from London. It is a place of considerable antiquity, pleasantly situated on the north side of the river Deben, on the slope of a hill, which commands a fine view down the river to its influx into the sea. The town consists of two principal streets, a spacious square called Market Hill, and several narrow streets and lanes, well paved and lighted. The river near its mouth is called Woodbridge Haven, and is navigable for vessels of 120 tons burden up to the town, which carries on a considerable traffic with London, Hull, Newcastle, and the continent, and has several docks for building vessels, with commodious wharfs and quays. The principal exports are corn, flour, and malt; and the imports coal, timber, foreign wine, spirits, grocery, drapery, and ironmongery. The shipping is greatly on the increase. Population in 1831, 4769.

WOODCHUCK. See *Marmot*.

WOODHOUSELEE. See *Tytler*.

WOODPECKER (*picus*). These birds have a short angular bill, wedge-shaped at the apex, straight, or, in a few species, slightly arcuate, and furnished with feathers at the base. The tongue is long, worm-like, capable of being protruded beyond the beak, and terminates in a horny and very acute point, barbed with reflexed spines, like an arrow, and serves to transfix insects. This operation is accomplished by the peculiar form of the os hyoides, the two branches of which are prolonged around the skull, passing over the summit, till they touch the base of the bill, and a corresponding muscular arrangement. The tarsi are short and robust; the toes, two before and two behind, long-armed, with strong, compressed, hooked nails, every way adapted for clinging. The tail, besides, serves the purpose of a third member, having the shafts of the feathers stiff, elastic and projecting, acting the part of a bracket in supporting the bird, when thrown inward against the trunk of a tree. The species are numerous, and are found in all parts of the globe; at least in all that are covered by forests. They cling to the trunks of trees, holding their bodies upright, and strike holes in the bark, in search of insects which take shelter in the crevices. They nestle in holes of trees, which they excavate by repeated blows with their beaks. Some occasionally feed on fruits and berries. Their plumage is very much varied, composed of the most striking colours, blue only excepted. There are numerous and very beautiful species in the United States, such as the ivory-billed, pileated, hairy, downy, Carolina, red-headed, red-cockaded, and yellow-bellied. The golden-winged woodpecker, or flicker, is remarkable for having the bill slightly arcuated. In Canada and the extreme northern parts of the United States, a species is found having but three toes; and others exist, in the East Indies, having the fourth toe very short, or merely rudimentary.

WOODS, LAKE OF THE. See *Lake of the Woods*.

WOODSTOCK; a borough and market-town of England, in Oxfordshire, sixty-two miles west-north-west from London. Woodstock has two manufactures, those of polished steel and gloves; the former much decayed: the latter was begun here about seventy years ago. Population in 1831, 1380. Previous to the passage of the reform act in 1832, it returned two members to parliament, who were chosen by about 400 voters. By that act it was deprived of one member.

WOOL; a term used very indefinitely. It is applied both to the fine hair of animals, as sheep, rabbits, some species of goats, the vicugna, &c., and to fine vegetable fibres, as cotton (the German name of which is *tree-wool—Baumwolle*). In this article, however, we refer only to the wool of sheep, a substance which, from the earliest periods, has been of primary importance, because it has always formed the principal material of the clothing of mankind in most temperate regions. What Columella says (lib. viii, cap. 2), still remains true: *Post majores quadrupedes, ovilli pecoris secunda ratio est, quæ prima sit, si ad utilitatem magnitudinem referas. Nam id præcipue nos contra frigoris violentiam protegit; corporibusque nostris liberaliora præbet velamina.* We have given, in the articles *Sheep*, and *Sheep-Raising*, some historical and other information on this interesting subject, and must refer the reader to that article, as forming, in some degree, one whole with the following. On those parts of the sheep where wool does not grow, it has hair, like other animals, as on the nose and the lower part of the legs. Those parts of the skin which cover flesh, always produce wool in the healthy state of the animal. The fibres of the wool are either straight and lank, or crooked and interlaced. The division into locks, formed by the coherence of the single fibres, varies in every species of wool, and forms what is called the *staple*. The body of wool, which is shorn in connexion from one animal, is called a *fleece*. If we imagine a fleece spread out, the wool of the head, the legs, the belly, and the tail (which is the worst), form the exterior parts or margin. The wool of the same animal differs much on the various parts of the body: that on the back and the sides is the best. The great difference in the wool of different sheep depends, in general, upon their descent, the crossing of breeds, climate, food, and manner of living, and among the individual animals of the same breed, upon age, sex, and outward circumstances. The wool is, therefore, divided into coarse wool, which is long, either straight or irregularly curled, and fine wool, which is regularly curled. There are again many subdivisions. In Spain, the sheep are sorted before the washing, then shorn, and at last the wool is washed. It comes into the market divided into four sorts: *refina*, *prima*, *segonda* and *tercera*. The Saxon wool is also divided into four sorts: *electoral*, *prima*, *secunda* and *tertia*. To sort the wool requires much practice, in order to discern minute differences that are quite inappreciable by common observers. Frequently eight or ten different kinds are found in a single fleece; and if the best wool of one fleece be not equal to the finest sort, it is put with a second, third or fourth, or a still lower class, of an equal degree of fineness with it. The best English native short fleeces, such as the fine Norfolk and South Down, are generally divided by the wool-sorter into the following kinds, all varying in fineness, viz. 1. prime; 2. choice; 3. super; 4. head; 5. downrights; 6. seconds; 7. fine abb; 8. coarse abb; 9. livery; 10. short, coarse, or breech wool. The relative value of each varies according to the greater demand for coarse, fine or middle cloths. Fine Merino wool, upon healthy and full-grown animals, grows within a year from one to two inches, generally from one and a half to two inches. As the fineness of the wool is a very important quality (though softness is equally so), "wool-measures" have been invented. One of these, that of A. C. F. Köhler and K. Hoffmann, two German gentlemen, measures a hundred of the fibres of the wood at once: they are put into a cavity in the middle of the instrument, and pressed by a peculiar apparatus, with a weight of about three Leipsic pounds, till the maximum reaction of their elasticity is reached, and the result is indicated, sixty times magnified, on a semicircle divided into degrees. Mr Köhler has written a pamphlet on the use of this instrument, and Mr Hoffmann makes them for sale in Leipsic. The price of one is forty Saxon dollars. The softness of the fibre, as already observed, is of great importance. It does not depend on fineness, and consists of a peculiar feel, approaching to that of silk or down. The difference in the value of two pieces of cloth, made of two kinds of wool equally fine, but one distinguished for its softness, and the other for the opposite quality, is such, that, with the same process and expense of manufacture, the one will be worth from twenty to twenty-five per cent. more than the other. Mr Bakewell maintains that the degree of softness depends principally on the nature of the soil on which sheep are fed; that sheep pastured on chalk districts, or light, calcareous soil, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its softness. The Saxon wool is generally softer than the Spanish. Hard wools are all defective in felting properties. The felting property of wool is known to every one. The process of hat-making, for example, depends entirely upon it. The wool of which hats are made is neither spun nor woven; but locks of it, being thoroughly intermixed and compressed in warm water, cohere, and form a solid, tenacious substance. Whole tribes use felted wool for cloth. Cloth and woollen goods are made with us from wool possessing this property: the wool is carded, spun, woven, and then, being put into the fulling-mill, the process of felting takes place. The strokes of the mill make the fibres cohere: the piece subjected to the operation contracts in length and breadth, and its texture becomes more compact and uniform. This process is essential to the beauty and strength of woollen cloth. But the long wool, of which stuffs and worsted goods are made, is deprived of its felting properties. This is done by passing the wool through heated iron combs, which take away the *laminæ*, or feathery part of the wool, and approximate it to the nature of silk or cotton. Long or combing wool may vary in length from three to eight inches. The shorter combing wools are principally used for hose, and are spun softer than the long combing wools; the former being made into what is called *hard*, and the latter into *soft* worsted yarn. Short wool is used in the cloth manufacture, and is, therefore, frequently called clothing wool. It may vary in length from one to three or four inches: if it be longer, it requires to be cut or broken to prepare it for the manufacture. In clothing wool, the colour of the fleece should always approach as much as possible to the purest white; because such wool is not only necessary for cloths dressed white, but for all cloths that are to be dyed bright colours, for which a clear white ground is required to give a due degree of richness and lustre. Some of the English fine woolled sheep, as the Norfolk and South Down have black or gray faces and legs. In all such sheep there is a tendency to produce gray wool on some part of the body, or to produce some gray fibres intermixed with the fleece, which renders the wool unfit for many kinds of white goods; for though the black hairs may be too few and minute to be detected by the wool-sorter, yet, when the cloth is stoved, they become visible, forming reddish spots, by which its colour is much injured. The Herefordshire sheep, which have white faces are entirely free from this defect, and yield a fleece without any admixture of gray hairs. The cleanness of the wool is an important consideration. The Spanish wool, for example, is always scoured after it is shorn, as stated above; whereas the wool of many other countries is only imperfectly washed previously to its being shorn. In consequence of which, it is said that while a pack of English clothing wool, of 240 pounds weight, will waste about seventy pounds in the manufacture, the same quantity of Spanish wool will not waste more than forty-eight pounds. Cleanness, therefore, is an object of much importance to the buyer. Whiteness of fleece is of less importance in the long combing than in clothing wool, provided it be free from gray hairs. Sometimes, however, the fleece has a dingy brown colour, called a *winter stain*, which is a sure indication that the wool is not in a thoroughly sound state. Such fleeces are carefully thrown out by the wool-sorter, being suitable only for goods that are to be dyed black. The fineness of heavy combing wool is not of so much consequence as its other qualities. We have already spoken, in the article *Sheep*, of the deterioration of British wool from the raising of fine mutton. The better the meat, the coarser the wool. However, whilst the average weight of a fleece of the German Merino breed is about two and a half to three pounds, that of a fat Leicester sheep is from eight to nine pounds, and thus the large fleece somewhat makes up the loss of fineness by increase of weight, so that it is probable, that, notwithstanding the decline in the price of wool, taking into account the greater weight of the carcass and the greater weight of the fleece, sheep produce more at present to the British farmer than at any former period. According to table, formed by order of the lords' committee of 1828, and published in their report on the wool [illegible] question, the quantity produced, on an average of years, in England, is 111,160,560 pounds: the importation was, in 1828, 29,122,447 pounds, making a total of 140,283,007 pounds for every year's consumption and exports in the shape of manufactured goods. In Germany, the fine wool produced has surprisingly increased since 1815, or since peace took place. We have spoken of the history of this branch of industry, in Germany, in the article *Sheep*. We only add, that, from papers laid before the British parliament, it appears, that for the year ending January 5, 1829, there were imported from Germany 23,110,822 pounds of wool, which, calculated at an average of 1*s*. 6*d*. per pound, makes a return, from England alone, of £1,733,311, 13*s*. Admitting only one half more for the wool exported to France, the Netherlands, Russia, Poland and Switzerland, and assuming that the internal manufactures of Germany consume one half of the wool produced, which is short of the truth, the result will give £5,199,934, 19*s*. of annual value, created by the growth of wool now raised, instead of the worthless hair produced upon the old indigenous sheep of Germany, which was scarcely in sufficient quantity to supply the peasantry with worsted petticoats and stockings. It is not only in Saxony that fine wool is raised: in Silesia, Moravia, Austria Proper, Bohemia, also in Hungary, &c., noble flocks have sprung up. Until the elector of Saxony received a present of a small Merino flock from the king of Spain, about thirty years since, the only fine wool known was the Spanish wool, which at that time was supplied to England, France and the Netherlands for their fine cloth manufactures. Unfortunately for the Spanish flock-masters, the captains of Napoleon's armies which invaded Spain, drove several of the finest flocks into France; and many others were killed or dispersed by the various parties which ravaged that country during the contest for its dominion. So completely were they destroyed, and the original system of keeping the sheep lost, in the convulsions of that period, that the wool has degenerated into a quality not worth more than one third of that of the same stock of sheep in Germany. The following table, taken from the English custom-house returns of imports, will show the effects of this transfer of the Merino breed from Spain to Germany:—

Imported from	in 1800.	1814.	1827.	
Germany,	421,350	3,596,146	22,007,198	pounds.
Spain and Portugal,	7,794,758	9,234,991	4,349,643	

In 1800, the ports of both countries were open to English commerce, as well as at the two latter periods; so that, in fact, the progressive increase of importations from Germany, and the decrease from Spain, are the best possible tests of the revolution which has taken place in the relative position of these two countries as respects the wool cultivation. A table below shows the different prices. But not Germany only has become a rival of Spain: two distant colonies of England may now vie with both—New South Wales and Van Diemen's Land. In the year 1795, a small flock of sheep, not exceeding one dozen, was carried to the upper colony of New South Wales, from the cape of Good Hope. From these sprung the vast flocks which now exist there. The quantity of wool yielded for a long time was too small to form a shipment to England; but, in 1804, some Merinos, purchased from the king's flock at Windsor, were sent out; and such a prodigious increase of sheep took place, that whilst, in 1806, only 245 pounds of wool were imported into England from New South Wales, in 1837, 4,606,915 pounds were imported from that colony, and 2,453,610 pounds from Van Diemen's Land, making in all 7,060,525. Saxony sheep have also been imported into the colony, direct from Germany, and such is the influence of climate or herbage, or both, that they thrive amazingly, and every year seems to add to the fineness of the wool. It is thought, that, in a short time, Britain will derive the whole of her supplies of foreign wool from this part of the globe. Sheep-farming now constitutes the chief employment and dependence of the New South Wales colonist. Some possess 15,000 or 20,000 sheep. These are divided into separate flocks, more or less numerous, according to the nature of the country and the pasture. The work of the shepherd is very severe, especially in the more sterile parts of the colony.

The value of the various kinds of wools of the different countries in the London market, is,—

Germany.		s.	d.		s.	d.
Saxony and Silesia,	1st and 2d. Electoral, per lb.	4	0	to	6	6
	Prima,	2	6	..	3	6
	Secunda,	1	9	..	2	3
	Tertia,	1	6	..	1	9
Austria, Bohemia and Hungary,	Elector,	4	0	..	5	6
	Prima,	2	4	..	3	9
	Secunda,	1	9	..	2	3
	Tertia,	1	3	..	1	9
Lambs',		1	6	..	3	9
Pieces,		1	6	..	2	6
Fribs,		1	3	..	1	9
Fleeces,		1	6	..	2	6
Spanish, Leonesa,		2	0	..	2	9
Segovia,		2	0	..	2	4
Soriana,		1	10	..	2	0
Caceres,		2	0	..	2	3
Seville,		1	8	..	1	10
Portugal,		1	2	..	1	4
Lambs',		1	4	..	2	0
Australian, best,		2	0	..	5	0
2d and inferior,		1	2	..	2	0
Lambs',		1	2	..	2	1
Van Diemen's Land,						
Greasy and inferior,		0	9	..	1	0
Clean and better,		1	3	..	1	9
Eng. Merino, washed,		1	9	..	2	6
In the grease,				none.		
South Down,		1	0	..	1	4
Goats' wool, Turkey,		1	4	..	1	8

According to a work by M. Ternaux, Paris, 1827, on sheep-breeding and the wool trade in France, the Spanish wool was, forty years ago, the dearest. Since 1794, but particularly since 1804, its price has sunk considerably, whilst that of Saxon wool has risen. In 1804, a kilogramme of the best Spanish wool cost twenty-four francs; in 1827, only nine francs; the best French wool at the first period, eighteen francs, at present, twenty francs; and Saxon electoral wool, at the first period, sixteen francs, at present, thirty-four francs.

An account of the quantity of Sheep and Lambs' Wool imported into and exported from the United Kingdom in the years 1835 *and* 1836; *also an account of the British Woollen Manufactures exported in each of the same years:—*

	1835.	1836.
Sheep and Lambs' Wool Imported	42,209,949 lbs.	64,272,390 lbs.
Foreign Sheep and Lambs' Wool re-exported	4,101,700 ..	613,707 ..
Foreign Sheep and Lambs' Wool remaining under Bond Dec. 31st	2,846,014 ..	6,111,252 ..
British Sheep and Lambs' Wool exported	4,642,604 ..	3,942,407 ..
Woollen and Worsted Yarn, &c. exported	2 357,336 ..	2,546,177 ..
Value of British Woollen Manufactures exported	£6,840,511	£7,639 353

As England is the great woollen mart—the following table of exports and imports will afford some idea of the relative production of wool in the various countries of the world.

An Account of the Quantity of Foreign Wool Imported into, and of Foreign and British Wool, Woollen Yarn, and British Manufactured Woollen Goods Exported from, the United Kingdom, distinguishing the Countries whence the same was brought, or whereto it was Exported, in the Year 1832.

COUNTRIES.	FOREIGN WOOL.		BRITISH.		BRITISH MANUFACTURED WOOLLEN GOODS.											
	Imported.	Exported.	Wool Exported.	Woollen Yarn Exported.	Cloths of all sorts.	Napped Coatings, Duffels, &c.	Kerseymeres.	Baizes of all sorts.	Stuffs, Woollen or Worsted.	Flannels.	Blankets and Blanketing.	Carpets and Carpeting.	Woollens mixed with Cotton.	Hosiery, viz. Stockings Woollen or Worsted.	Sundries, consisting of Hosiery not otherwise described, Rugs, Coverlids, Tapes, and Small Wares.	Declared Value of British Woollen Manufactures Exported from the United Kingdom.
	lbs.	lbs.	lbs.	lbs.	Pieces.	Pieces.	Pieces.	Pieces.	Pieces.	Yards.	Yards.	Yards.	Yards.	Doz. Prs.	£. s. d.	£. s. d.
Russia	856,690	2,596	414	44,834	8,473	144	2,895	4	47,028	35,754	3,140	20,089	4,067	215	74 0 0	144,997 0 0
Sweden	......	....	....	449	6	....	....	....	4,533	....	1,490	706	....	90	3 0 0	4 966 2 0
Norway	......	....	....	....	182	....	37	22	1,743	2,416	1,600	....	4,845	287 6	253 15 6	7,694 18 9
Denmark	302,848	....	....	205	36	47	....	...	536	3,016	180	1,300	....	256	50 0 0	1,380 0 0
Prussia	833,988	....	....	6,771	19	8,868	9	...	97	990	170	160	910	8	....	626 10 0
Germany	19.832,225	27.056	32 394	1,128,196	17,855	13,030	21,101	622	725,506	354,210	2,274	52,764	326,989	,027	4,768 0 0	816,718 12 0
The United Netherlands	909,144	435,599	3,416,963	425,751	9,862	38	2,514	8,308	142,168	1,000,356	12 736	18,516	379.871	29,120 6	4,383 0 0	389.910 2 6
France	1,973	67,772	736,482	3,361	742	353	103	15	15,862	44,359	100	5,404	28,236	758	232 0 0	43,186 12 0
Portugal, Azores, and Madeira	193,544	....	....	2,378	10,434	33	440	3,440	12,505	5.165	25.620	4,503	21,940	190	1,641 5 0	96,625 6 0
Spain and the Canaries	2,626.624	....	....	808	2,417	32	255	1,605	21,870	13.430	3,060	1,967	14,901	15	467 12 0	62,472 14 0
Gibraltar	......	....	....	230	1,613	5	159	120	4,240	5,054	4,000	3,116	11,659	619	864 0 0	25,681 0 0
Italy	78 552	....	5,712	17,306	7,447	....	764	29	113,484	21,484	3,518	20,678	11.070	1,970	936 5 0	194,081 11 0
Malta	564	....	....	....	824	20	22	....	1,415	2,404	....	70	2,460	164	13 0 0	8 077 10 0
Ionian Islands	......	....	....	....	287	60	24	7	116	2.420	60	730	70	140	....	2,322 0 0
Turkey and Continental Greece	32,457	....	....	....	1,656	9	45	2	7,960	5,830	840	22,120	1,640	57	70 0 0	27,829 3 8
Morea and Greek Islands	......	....	....	....	7	35	....	....	....	....	....	....	....	....	....	140 0 0
Isles of Guernsey, Jersey, Alderney, and Man	13,516	2,464	6,076	9,537	2,492	50	....	245	4,996	75,704	26,960	12,009	400	630 6	1,529 2 0	40,964 10 0
East Indies and China	......	....	....	3,656	55,081	12	115	47	178,895	70,100	28,700	10,544	50,090	4,206 2	2,864 5 10	696,073 8 4
New Holland	2,377,067	20	....	....	2,002	317	196	33	3,613	35,382	79,909	12,629	3,348	3,569	690 9 6	35,657 5 0
Cape of Good Hope	83,257	...	....	20	4,010	...	420	336	7.555	26,590	14,070	3,312	37,102	962	681 0 0	41,765 10 0
Other parts of Africa	......	....	....	848	421	241	84	66	3 381	6,040	2,350	300	824	372 6	1,831 0 0	12,890 19 0
British North American Colonies	......	3,235	784	10,808	47,227	69	616	907	51.706	444,774	282 250	109,162	18,002	18,582 1	11,927 15 10	362,436 9 5
British West Indies	877	...	....	18	8,261	....	195	5,047	13,747	58,500	160,791	3,584	4,155	2,007	4,578 3 6	92,902 15 6
United States of America	628,038	16,262	1,000	547,389	151.530	90	776	266	336,897	54,939	875,396	345,471	258,919	71,478 9	10,842 17 6	1,420,042 18 8
Foreign West Indies	......	....	....	....	5,711	....	97	144	18,312	17,069	77,033	2,380	6,860	902 0	802 0 0	66,519 5 0
Brazil	15,456	....	....	....	19,814	....	1,176	11,977	48,026	11,706	26,994	864	45,793	405 0	1,779 0 0	210,163 8 0
Mexico, and the States of South America	56,689	....	....	1,899	37,952	....	8,941	1,637	34,523	7,067	48 629	26,664	99,881	8,778 0	4,162 10 0	437,763 0 0
Total	28.142 489	555,014	4,199,825	2,204,464	396,661	23,453	40,984	34,874	1,800,714	2,304,750	1,681,840	690,042	1,334,072	152,810	55,443 1 8	5,244,478 10 10
Total in the Year 1831	31,652,029	1,036,962	3,494,275	1,592,455	436,143	13,892	29,650	30,269	1,487,404	1,572,868	2,546,328	678,656	1,000,004	143,774	64,648 0 0	5,232,013 0 0

For more information, we refer the reader to the various English publications on this subject, which include several able treatises on the question of the wool trade. Various German and French treatises also should be mentioned; as Wagner's Contributions to the Knowledge and Treatment of Wool and Sheep (2d ed., Berlin, 1821); F. B. Weber, On the Raising of fine and noble Wool (Breslau, 1827); J. M. baron von Ehrenfels, On the Electoral Sheep and Electoral Wool (Prague, 1822); Count Charles André, Latest Views on the Raising of Wool and Sheep, taken from three French Writers (Prague, 1825, 4to.); Sheep and Wool, by professor Ribbe (Prague, 1825); Petri's Whole Subject of Sheep-Breeding, &c. (Vienna, 1825, 2 vols., 2d ed.); The latest and most interesting Notices respecting a Knowledge of the finer Kinds of Sheep and Wool, by the same (Vienna, 1829); On the Wool Trade of Germany in 1829, by Elsner (1830): all of these works are in German: further, *Nouveau Traité sur Laine*, by viscount Perrault de Jotemps (Paris, 1824); *Histoire de l'Introduction des Moutons à Laine fine d'Espagne dans les divers Etats de l'Europe*, &c., by M. C. P. Lasteyrie (Paris, 1802); *Notice sur l'Amélioration des Troupeaux de Moutons en France*, by G. L. Ternaux (Paris, 1827). The reports on the trade in the newly-erected wool markets at Berlin, Breslau, Stettin, Dresden, Leipsic, Nuremberg, &c., published in the *Allgemeine Zeitung*, are also of much interest. See the next article.

WOOLLENS. The fibres of wool, being contorted and elastic, are drawn out and spun by machinery in some respects similar to that used for cotton, but differing in various particulars. In the preceding article, it is mentioned that there are two sorts of wool which afford the basis of different fabrics, the *long* wool or worsted, in which the fibres are rendered parallel by the process of combing, the material of which camlets, bombazines, &c., are made, and the *short* wool, prepared by carding, like cotton, which is used, in different degrees of fineness, for broadcloths, flannels, and a multitude of other fabrics. This wool, when carded, is formed into small cylindrical rolls, which are joined together, and stretched and spun, by a slubbing or roving machine, and a jenny or mule, in both of which the spindles are mounted on a carriage, which passes backwards and forwards, so as to stretch the material, at the same time that it is twisted. On account of the roughness of the fibres, it is necessary to cover them with oil or grease, to enable them to move freely upon each other during the spinning and weaving. After the cloth is woven, the oily matter is removed by scouring, in order to restore the roughness to the fibres preparatory to the subsequent operation of fulling.—In articles which are made of long wool, the texture is complete when the stuff issues from the loom. The pieces are subsequently dyed, and a gloss is communicated to them by pressing them between heated metallic surfaces. But in cloths made of short wool, the web, when taken from the loom, is loose and open, and requires to be submitted to another operation, called *fulling* (q. v.), by which the fibres are made to felt, and combine more closely. (See *Felting*.) By this process, the cloth is reduced in its dimensions, and the beauty and stability of the texture are greatly improved. The tendency to become thickened by fulling, is peculiar to wool and hair, and does not exist in the fibres of cotton or flax. It depends on a certain roughness of these animal fibres, which permits motion in one direction, while it retards it in another. It thus promotes entanglements of the fibres which serve to shorten and thicken the woven fabric. Before the cloth is sent to the fulling-mill, it is necessary to cleanse it from all the unctuous matter which was applied to prepare the fibres for spinning. The nap or downy surface of broad cloths, is raised by a process, which, while it improves the beauty, tends somewhat to diminish the strength of the texture. It is produced by carding the cloth with a species of burrs, the fruit of the common teasel, (*dipsacus fullonum*), which is cultivated for the purpose. This operation extricates a part of the fibres, and lays them in a parallel direction. The nap, composed of these fibres, is then cut off to an even surface, by the process of *shearing*. This is performed in various ways: but, in one of the most common methods, a large spiral blade revolves rapidly in contact with another blade, while the cloth is stretched over a bed, or support, just near enough for the projecting filaments to be cut off at a uniform length, while the main texture remains uninjured.

Manufacture of Woollens. In England, the arts of spinning wool and manufacturing the yarn into cloth, were undoubtedly introduced by the Romans. The manufacture of broad cloths was established soon after the year 1200, if not previously. But the woollen manufacture of Flanders being, at this period, and long after, in a comparatively advanced state, English wool was exported in large quantities to Bruges and other Flemish cities, whence fine cloths and other products were brought back in exchange. Edward III. invited over Flemish weavers, fullers, dyers, and others. Shortly after the first emigration of Flemings, or in 1337, an act was passed, prohibiting the wearing of any cloths made beyond sea, and prohibiting the export of English wool. From that period, the manufacture has always been regarded as of primary importance. During the reign of Charles II., there were many, though unfounded, complaints of the decay of the manufacture; and by way of encouraging it, an act was passed, ordering that all persons should be buried in woollen shrouds. This act preserved its place in the statute book for more than 130 years. Towards the end of the seventeenth century, Mr Gregory King and Doctor Davenant (Davenant's *Works*, Whitworth's ed., vol. ii., p. 233), estimated the value of the wool shorn in England at £2,000,000 a year; and they supposed that the value of the wool (including that imported from abroad) was quadrupled in the manufacture, making the entire value of the woollen articles annually produced in England and Wales, £8,000,000, of which about £2,000,000 were exported. In 1700 and 1701, the official value of the woollens exported amounted to about £3,000,000 a year. Owing to the vast increase in the wealth and population of the country, the manufacture must have been very greatly extended during the last century; but the increase in the amount of the exports has been comparatively inconsiderable. At an average of the six years ending with 1799, the annual official value of the exports was £3,544,160 a year, being an increase of only about £540,000 on the amount exported in 1700. The extraordinary increase of the cotton manufacture, soon after 1780, and the extent to which cotton articles then began to be substituted for those of wool, though it did not occasion any absolute decline of the manufacture, no doubt contributed powerfully to check its progress. In 1802, the official value of the exports rose to £7,321,012, being the largest amount they have ever reached. In 1812, they sunk to £4,376,479. During the three years ending with 1830, the official and the declared or real values of the woollen manufactures exported from the United Kingdom were as follows:—

	1828	1829.	1830.
Official value of woollen manufactures exported,	£5,728,969	£5,372,490	£5,558,709
Declared or real value of ditto, ...	5,125,984	4,661,259	4,850,884

In 1836, the declared value (as may be seen from a previous table) was £7,639,363.

Value of the Manufacture. Number of Persons employed.—The most discordant estimates have been given as to both these points. For the most part, however, they have been grossly exaggerated. Mr Stevenson, who is one of the writers on British statistics on whose statements the most reliance is to be placed, after a careful examination into the subject, has given the following estimate of the value of the woollen manufactured goods annually produced in England and Wales, and of the interest, &c., of the capital, and the number of persons employed in the manufacture:—

Total value of manufactured articles, ...		£18,000,000
Value of raw material, .	£6,000,000	
Interest on capital, sum to replace its wear and tear, and manufacturers' profits,	2,400,000	
Wages of workmen, .	9,600,000	
		£18,000,000

Number of people employed, 480,000, or perhaps 500 000.

We believe, however, taking Scotland into account, and looking at the probable annual expenditure of each individual on woollens, that the total value of the manufactured articles annually produced in Great Britain may, at present, be moderately calculated at £20,000,000, or £22,000,000. But, on the other hand, Mr Stevenson has materially underrated the proportion of the entire value of the manufacture falling to the share of the capitalists, and required to indemnify them for their various outgoings, and to yield them ordinary profits. In estimating the wages of the persons employed at about eight shillings a week, or twenty pounds a year, he is below the mark; and ten shillings a week, or twenty-six pounds a year, would be a more correct average. The number of persons employed in the manufacture does not probably much exceed, if it does not fall short of 400,000.

The low condition of the woollen manufactures in the United States of America at the commencement of the last war with Great Britain, was shown by the request of the secretary of war to congress, that the existing laws might be so far repealed as to allow the importation of six thousand blankets for the Indian department. The law, however, was not repealed, and the want of woollens, during that contest, caused the establishment of some woollen factories, and an extension of the business of those which had previously existed; but they could supply only a small part of the demand, and an illicit trade was, in fact, kept up with the enemy. The growth of sheep, and the manufacture of their wool, was of considerable value soon after the close of the war; and many millions of dollars were invested in these branches of business, finewoolled sheep having been purchased at most ex-
travagant prices, because fine wool had been
for from three to four dollars per pound. But t
high duties imposed during the war were reduc
after its termination, and vast quantities of Bri
and other woollen goods were introduced and
crificed to break up the American establishmen
The manufacturers were ruined, and the she
were, to a great extent, slaughtered. Soon aft
the British cloths greatly advanced in price, a
the American establishments began partially to
vive, and maintained themselves, though the bu
ness was not profitable till the passage of the 'ta
law of 1824, by which the existing duty of fifte
per cent. on cloths and cassimeres, was immediat
ly raised to thirty per cent., and was to be
thirty-three and a half per cent. after June
1825. An ad valorem duty of twenty per cen
instead of the existing duty of fifteen per cen
was also imposed on imported wool, to advance
thirty per cent. after June 1, 1826, on all wo
costing more than ten cents per pound. Conte
poraneously with the changes in the American t
riff, a revision of the English tariff was mad
avowedly with the object of enabling the Bri
manufacturers to command the foreign, and esp
cially the American market of low-priced clot
The duty imposed in 1824, proved inadequate t
the protection of the American woollen manufac
tures; and their languishing state indicated the ru
of those engaged in them, unless further legislat
encouragement was afforded. A bill to this eff
received the sanction of the house, but was laid
the table in the senate by the casting vote of t
vice-president. Steps were immediately taken
bring the subject again before congress; and a co
vention of delegates from the states interested w
held at Harrisburg, in August, 1827. This co
vention prepared a memorial, recommending an a
valorem duty of forty per cent. on woollen manu
factures, with an annual increase of five per cen
until it amounted to fifty per cent. In the debat
on this subject in the next session of congress, M
Mallary estimated the consumption of woollens
the United States at 72,000,000 dollars per a
num; of which 10,000,000 dollars were imported
22,000,000 dollars the productions of Americ
manufactures, and 40,000,000 dollars the result
household industry. The tariff adopted duri
that session much increased the existing duties bo
on manufactured and unmanufactured wool. Som
changes in these particulars were made by the tar
of 1832. In the report on wool and woollens, mad
to the "friends of domestic industry," assembl
in New York in the autumn of 1831, the gr
annual product of wool and its manufactures in th
United States was estimated at 40,000,000 dollar
The fixed and floating capital vested in the woo
len manufactories in the United States, such
lands, water-rights, buildings, machinery, stock
hand, and cash employed, was estimated at an equ
amount. The proportion between the amount
wool used in the factories and that worked up
household industry, was estimated to be as three
two.

WOOLLÈTT, William, an eminent engrave
was born at Maidstone, in Kent, August 27, 17
He was the son of a thread-maker, and early
tracted the notice of his school-master by his di
play of talent for drawing. Having attempte
some engravings in copper, which were seen by
Tinney, an engraver, the latter took him as
apprentice. When out of his time, his rise in

profession was very rapid; and he brought the art of landscape engraving to great perfection. He also engraved historical subjects and portraits with the greatest success. All his best works bring high prices, but particularly his Niobe, Phaëton, Ceyx and Alcyone, Celadon and Amelia, and the Fishery, all from Wilson; and his Death of General Wolfe, and Battle of the Boyne, from West. He died, May 23, 1785, at the age of fifty.

WOOLSACK: the seat of the lord chancellor of England, in his capacity of speaker of the house of lords. It is what its name implies, a large square bag of wool, without back or arms, covered with red cloth. In front of the lord chancellor lie the great seal and the mace. The judges, king's counsel at law, and masters in chancery, who sit in the house of lords, but who do not vote, are likewise seated on woolsacks. The practice was derived from the well-known fact of wool having been, from an early period, the great staple of England.

WOOLSTON, Thomas, an English divine, the son of a tradesman of Northampton, was born in 1669. He was admitted of Sidney college, Cambridge, in 1685, of which he was subsequently elected fellow, and took orders. Having become an assiduous reader of the works of Origen, he imbibed a fondness for allegorical interpretations of Scripture; the result of which tendency appeared in 1705, in a work entitled the Old Apology for the Truth of the Christian Religion against the Jews and Gentiles revived. The object of this tract was to prove that all the actions of Moses were typical of Christ and his church, and to show that some of the fathers understood them as such, and not as realities. In 1720, he left his college, and went to London, where he published a Latin dissertation concerning the supposed epistle of Pontius Pilate to Tiberius. In the same year, he published two Latin dissertations in defence of Origen's allegorical mode of interpreting the Scriptures. His next work was an Inquiry whether the Quakers do not, the nearest of any other Sect, in Religion, resemble the Primitive Christians in Principles and Practice. His chief object in this publication was, apparently, to attack the clergy, which, with his refusal to reside at college, according to the statutes, caused him the loss of his fellowship, in 1721. In 1726, he published a Defence of the Miracle of the Thundering Legion. Engaging in the controversy between Anthony Collins and his opponents, he published several pamphlets, in which he not only argued for mystical interpretations of the miracles of Christ, but asserted that they were never actually wrought. He was now regarded as an enemy to Christianity, and a prosecution was instituted against him by the attorney-general, which Whiston, and other friends to toleration, had the interest to get stayed. He was not, however, silenced, and, in 1727, and the three following years, published his Six Discourses on the Miracles, and two Defences of the Discourses, in which he not only maintained his former opinions, but expressed himself with a sarcasm and ridicule which gave serious offence: and the law again interfered. He was tried at Guildhall for blasphemy, when his counsel pleaded that it was so far from his purpose to bring the Christian religion into contempt, that he intended to place it on a firmer footing. He was, however, found guilty, and sentenced to a year's imprisonment, and a fine of a £100. He purchased the liberty of the rules of the king's bench prison, after the expiration of his imprisonment, not being able to pay his fine. He had obtained some money by his publications, which was swallowed up by legal expenses, and he chiefly relied for support on a small annual allowance from his brother, and the contributions of some respectable persons, who regarded him as a man of learning, misled by mysticism and enthusiasm. Solicitations were made for his release by doctor Samuel Clarke; but he declined giving any security not to offend again in a similar way. He was, however, soon after released by death, being carried off by an epidemic disorder in January, 1732—1733, in his sixty-second year.

WOOLWICH; a market town of England, in Kent, on the Thames, eight miles below London. It was formerly only a small village, and owes its consequence to the establishment of a royal dock in the reign of Henry VIII. The dock-yard has been progressively increasing since its establishment, and, in its present state, includes about five furlongs in length by one in breadth; within which space there are two dry-docks, five slips, three mast-ponds, a mould-loft, storehouses of various descriptions, mast-houses, sheds for timber, dwellings for the various officers, a very complete smithery for the manufacture of anchors, &c. This dock-yard is under the direction of a commissioner, who has also the control of that of Deptford; and, during the last war, the number of artificers and labourers employed here amounted to nearly 2000; since the peace, they are reduced to about two-thirds of that number. The arsenal at Woolwich, called the *Warren*, is the grand national depot for every species of ordnance, both military and naval, and contains an immense quantity of guns, gun-carriages, military wagons, and every thing pertaining to the department of the ordnance. The arsenal includes nearly sixty acres, and contains various piles of brick buildings for different uses. The number of artificers, labourers, and boys employed is about 3000, exclusive of the convicts, who amount to about 900, generally employed in the most laborious offices.

The origin of the royal arsenal at Woolwich is curious. It is thus given in the Penny Magazine, for 1833. "The government foundry for casting brass ordnance was formerly situated in Moorfields. The process of casting the cannon was then an object of curiosity to the inhabitants of the metropolis, many of whom, of all classes, frequently attended during the operation of pouring the melted metal into the moulds. The injured cannon which had been taken from the French in the successful campaigns of the duke of Marlborough, amounting to a considerable number, had been placed before the foundry and in the adjacent artillery ground, and it was determined in 1716, to recast these cannon. On the day appointed for performing this work, a more than usual number of persons were assembled to view the process. Many of the nobility and several general officers were present, for whose accommodation temporary galleries had been erected near the furnaces. Among the company then drawn together was Andrew Schalch, an intelligent young man, a native of Schaffhausen, in Switzerland, who was travelling for improvement: he was at the foundry at an early hour, and having been permitted minutely to inspect the works, detected some humidity in the moulds, and immediately perceived the danger likely to arise from the pouring into them of hot metal in such a state. Schalch communicated his fears to Colonel Armstrong, the surveyor-general of the ordnance, explained his reasons for believing that an explosion would take place, and strongly urged him and the rest of the company to withdraw from the foundry before the casting of the metal. The colonel having closely questioned Schalch on the subject, found him perfectly conversant with all the principles of the founder's art, and being convinced of the good sense which dictated his advice, quitted the foundry, together with all those persons who could be induced to believe that there were any grounds for apprehension. The furnaces being opened, the fluid metal rushed into the moulds, the moisture in which was instantly converted into steam, and its expansive force acting upon the metal drove it out in all directions with extreme violence; part of the roof was blown off, the galleries gave way, and a scene of much mischief and distress ensued. Many of the spectators had their limbs broken, most of the workmen were burnt in a dreadful manner, and several lives were lost. A few days afterwards an advertisement appeared in the newspapers, notifying that if the young foreigner who foretold this explosion would call at the ordnance office, it might prove advantageous to both parties. Schalch being informed, through a friend, of this intimation, lost no time in obeying the summons. Colonel Armstrong had then much further conversation with him on the subject; and became by this means so well assured of his superior ability, that it was finally agreed to intrust Schalch with putting into execution the intention of government to seek an eligible situation out of the metropolis, and within twelve miles thereof, to which the royal foundry should be removed. Schalch, after examining different places, at length fixed upon the rabbit warren, at Woolwich, as suitable to his purpose, and the erection of the works was left to his superintendence. The first specimens of artillery cast by Schalch were so much approved that he was appointed master founder to the board of ordnance, and this office he continued to hold during sixty years, assisted in the latter part of that term by his nephew Lewis Gaschlin. Twenty-five years ago, this nephew, then more than eighty years old, was still employed in the arsenal as principal modeller for the military repository. Schalch died in 1776, at the advanced age of ninety, and is buried in Woolwich church-yard. Some of the largest mortars now remaining in the arsenal were cast under his direction and bear his name."

At Woolwich is a royal military academy, instituted in 1719, but not finally arranged till 1741. It is under the direction of the master-general and board of ordnance for the time being: a lieutenant-governor, an inspector, a professor of mathematics, and four masters; a professor of chemistry; a professor of fortification, and two masters; one French master, two drawing masters, a fencing master, a dancing master, &c. The number of pupils, styled *cadets*, since the peace, has been reduced to 100. They are of the most respectable families; when admitted, must be at least four feet and nine inches high, and not exceed sixteen, nor be under fourteen, years of age. As soon as they are admitted on the establishment, they begin to receive pay, at the rate of £45 12s. per annum. The building is of a castellated form, and was built at the expense of about £150,000. Woolwich contains, also, barracks, a pagoda, used as a repository for models, several hospitals, and other charitable establishments. Population in 1831, 17,661.

WOOTZ. See *Steel.*

WORCESTER; the chief town of Worcestershire, and one of the most ancient cities in England, is agreeably situated in a beautiful vale on the eastern banks of the Severn, 103 miles northwest by west from London. Being an ancient fortified place, this city had a strong wall, of which some remains may yet be seen. The cathedral is a noble specimen of Gothic simplicity. It was first erected by Ethelred, king of Mercia, in 680, but was burned down and rebuilt in the beginning of the thirteenth century. It suffered considerable damage during the civil war, in the reign of Charles I. Its form is that of a double cross. It is in length, 410 feet; in breadth, 78; and in height, 68; and the tower, which rises, from the centre of the cross aisle, to the altitude of 200 feet, is ornamented at the corners by lofty pinnacles and battlements. The cathedral contains many handsome monuments, and is adorned with a variety of sculptures. This city suffered much during the wars between the houses of York and Lancaster; but the most remarkable event here was the famous battle between the English army, under Cromwell, and the Scotch, in the cause of Charles II., in 1651 (See *Cromwell.*) Of the parish churches, there are nine within the walls and two without. Here are various public buildings and charitable institutions, and meeting-houses for various sects. Its hop market is the most considerable in the kingdom. There is a bridge over the Severn, consisting of five arches. The trade of Worcester is considerable. The porcelain and glove manufactures are carried on to a great extent. It sends two members to parliament. Population in 1831, 18,610.

WORCESTER, JOHN TIPTOFT, earl of, a patron of learning, and one of the few literary ornaments of England in the fifteenth century, was born at Everton, or Evaston, in Cambridgeshire, and educated at Baliol college, Oxford. He was the son of lord Tibetot, or Tiptoft and Powys, and was created a viscount and earl of Worcester by Henry VI., who also appointed him lord-deputy of Ireland. By Edward IV. he was made knight of the garter, and constituted justice of North Wales for life. Dugdale says he was soon after made constable of the Tower; while others assert that he was twice lord high constable, and twice lord high treasurer. He was also a second time deputy or lieutenant of Ireland, under the duke of Clarence, in which capacity he attainted the earls of Kildare and Desmond for supporting the insurrection against government, and sentenced the latter to be beheaded. On the temporary reverse of fortune experienced by Edward IV. and the house of York, in consequence of the junction between the Earl of Warwick and the duke of Clarence, the earl of Worcester, the severity of whose judicial proceedings as high constable had rendered him extremely obnoxious to the Lancastrians, became one of the first objects of their vengeance. He endeavoured to find security for his person by concealment, but was discovered in a tree in the forest of Weybridge, near Huntingdon, and thence conveyed to London, where he was hastily tried on the accusation of cruelty in his Irish administration, particularly towards two infant sons of the earl of Desmond, and condemned to lose his head on Tower hill, on the eighteenth of October, 1470, which sentence was executed accordingly. He was married three times, but left only one son and heir, by his third wife. The earl of Worcester appears to have been a person of considerable learning and of great accomplishments for the age in which he lived. In his return from a pilgrimage to Jerusalem, he had passed some time at Venice, Padua, and Rome. He was led to Rome by his desire to see the Vatican library, and he there made an elegant oration to pope Pius II. He was a great collector of books, and gave manuscripts of 500 marks value to the university of Oxford. The literary works of this nobleman, as far as we are acquainted with them, are an English translation of Cicero *De Amicitia*, and of Two Declarations made by Publius Cornelius Scipio and Gayus Flamigneus, Competitors for the Love of Locrece, both printed by William Caxton; some Orations and Epistles; and an English translation of Cæsar's Commentaries, as touching British affairs, supposed to be printed in the reign of Henry VIII. In the sixth of Edward IV., he drew up Orders for the placing of the Nobility in all Proceedings, and Orders and Statutes for Justs and Triumphs; and in the Ashmolean collection are Ordinances, Statutes and Rules, made by John Tiptoft, Erle of Worcester, and Constable of England, by the King's Commandment, at Windsor, 29th May, 6th Edward IV., to be observed in all Justs of Peers within the Realm of England, &c. He is also said to have written a Petition against the Lollards, and an Oration to the Citizens of Padua; and among the manuscripts belonging to Lincoln cathedral is a volume containing about twenty epistles, four of his writing, and the rest addressed to him.

WORCESTER, Edward Somerset, marquis of, an English nobleman, celebrated for his scientific studies, and supposed to have been the first inventor of the steam-engine. This nobleman engaged in the service of Charles I. during the civil war, and, after its termination, spent his time in retirement, and in the cultivation of natural philosophy and mechanics. In 1663, he published a book entitled the Scantlings of One Hundred Inventions, in which he first gave a description of the uses and effects of his engine; and he afterwards published a small pamphlet, called an Exact and True Definition of the most stupendous Water-commanding Engine, invented by the Right Honourable (and deservedly to be praised and admired) Edward Somerset, Lord Marquess of Worcester. (See Steam.) In neither of these works does he give any statement of the mode of constructing his engine; but, from his description and account of its effects, it may be inferred that its action depended on the condensation as well as the elastic force of the steam, and consequently that in principle it resembled the modern steam-engine. It seems also that he had actually constructed a machine upon a large scale, though, unfortunately for himself and for the interests of science, he was unable to excite the attention of the public towards his project, and was looked upon by his contemporaries as a visionary speculator. His death took place in 1667, at the age of seventy.

WORCESTERSHIRE; an inland county of England, bounded on the north by Shropshire and Staffordshire, on the east by Warwickshire, on the south by the county of Gloucester, and on the west by that of Hereford. Its figure is irregular, and several tracts of lands belonging to it are enclosed by neighbouring counties, partly, perhaps, in consequence of its having no natural boundaries. The quantity of arable land in this county has been estimated at 360,000 acres, chiefly devoted to the cultivation of wheat, barley, oats, beans, pease, vetches, turnips, and hops. Cabbages are sometimes grown as a field crop; the sands of Wolverley are noted for the produce of carrots, and potatoes are raised in great plenty in the vicinity of Bromsgrove. Worcestershire has long been distinguished for the growth of hops, of which three varieties are here cultivated, the red, the green, and the white. The orchards and plantations of fruit-trees, which are frequently placed in the hedge-rows, form a considerable source of profit, from the production of cider and perry, for the excellence of which the county is much noted. Worcestershire formerly contained the royal forests of Wyre and Feckenham, and the Chase of Malvern, which have long since been disafforested; though the forest of Wyre, extending from the north-western part of the county into Shropshire, still contains much timber, and the underwood is largely used for hop-poles. The principal rivers in this county are the Severn, the Avon, the Teme and the Stour. The Severn enters Worcestershire, a little to the north of Bewdley; and passing southward by Worcester and Upton, receives the Avon just below Tewkesbury, where it enters Gloucestershire. The Avon passes into this county from Warwickshire, and after a winding course by Evesham and Pershore, it proceeds to its confluence with the Severn. The Teme has its source in Shropshire, and entering this county westward of Tenbury, takes a serpentine course to its junction with the Severn below Worcester. The Stour rises in Shropshire, and flows southward through some part of this county to join the Severn at Stourport. The climate of Worcestershire is mild, temperate, and salubrious, and the atmosphere is generally clear, there being no lakes of any magnitude, and but little extent of marsh or moorland. The only mineral productions of this county which require notice are the salt-rocks of Droitwich, and coal-mines in the north-western district. In the neighbourhood of Dudley is found, imbedded in limestone, an extraneous fossil, called the Dudley Locust. The principal manufactures of this county are those of gloves, china-ware, and cabinet-work, extensively carried on at Worcester; the glass and iron-works at Dudley and Stourbridge; the manufacture of carpets and bombasins, especially of the former, for which Kidderminster has long been famous; and nails, needles, and fish-hooks, made at Redditch and Bromsgrove; besides cider, perry, and salt, already mentioned. The mineral springs are numerous, and are found at Worcester, Kidderminster, Bromsgrove, Churchill, Abberton, and Malvern, the last of which are by far the most celebrated. This county contains the city of Worcester, which is its capital; the borough and market towns of Droitwich, Evesham, and Bewdley; and the market-towns of Bromsgrove, Dudley, Kidderminster, Pershore, Shipston, Stourbridge, Stourport, Tenbury, and Upton-upon-Severn. Population in 1831, 211,356.

WORD. In the scriptural sense, see *Logos*; in a philological meaning, see *Languages*, and *Philology*.

WORD, or WATCHWORD, in an army or garrison, is some peculiar word or sentence, by which the soldiers know and distinguish one another in the night, &c., and by which spies and designing persons are discovered. It is used also to prevent surprises. The word is given out, in an army, every night.

WORKINGTON; a seaport town in the county of Cumberland, situated on the south bank of the river Derwent, near the sea. The town contains a small theatre, and assembly and news rooms; the streets are mostly narrow and inconveniently arranged, but there are likewise many handsome houses of modern erection. A stone bridge of three arches, built at the expense of the county in 1763, crosses the river at the entrance to the town from Maryport. The harbour here is the safest on the coast, being secured by a breakwater, and lighted with gas. The quays, on which is a custom-house, subordinate to that at Whitehaven, are very commodious, and vessels are hence cleared out. Extensive collieries are worked here, and the trade consists chiefly in the export of their produce to Ireland and other parts of the kingdom. About 100 vessels are continually sailing backwards and forwards; a large number of people are also employed in ship-building, and the manufacture of articles in connexion with the same; besides about 400 in a straw-hat manufactory, for making imitation Leghorns. Salmon is taken along the coast. Population of town in 1831, 6415; of town and parish, 7196.

WORKSOP; a market-town and parish in the county of Nottingham, 146 miles north-north-west from London. It is situated in a valley, near the source of the river Ryton, towards the northern extremity of Sherwood Forest. It consists of two well-built streets, which are paved and lighted. The Chesterfield Canal passes the north side of the town; and at a short distance hence crosses the river by an aqueduct. The trade of the place consists chiefly in malt, which is sent in considerable quantities to Manchester and several other large towns. Population in 1831, 5566.

WORLD. See *Universe*, and *Earth* also *Commerce of the World*.

WORLITZ; a town in the duchy of Anhalt-Dessau, three leagues from the city of Dessau, with 1890 inhabitants, and beautiful gardens in the English style, laid out by the late duke. Several descriptions have been given of it. There is a collection of ancient works of art, especially paintings, in the (so called) Gothic house, in this garden. See *Dessau*.

WORM. In the common acceptation of the word, this term is applied to caterpillars and other larvæ of insects; to those beings which dwell in the interior of living bodies; in short, to all small, soft, cylindrical animals, however various their conformation and modes of life. Even Linnæus included in his class *vermes*. the oyster, and the other mollusca, as well as the echini, polypi and medusæ, or sea-blubbers, animals which have since been very properly separated.

WORM, in gunnery; a screw of iron, to be fixed on the end of a rammer, to pull out the wad of a firelock, carbine or pistol, being the same with the wad-hook, only the one is more proper for small arms, and the other for cannon.

Worm, in chemistry, is a long, winding, pewter pipe, placed in a tub of water, to cool and condense the vapours in the distillation of spirits.

Worm a cable or hawser, in sea language, is to strengthen it by winding a small line, or rope, all along between the strands.

WORMIUS, Olaus; a learned Danish physician, born in 1588, at Aarhuus, in Jutland, where his father was a burgomaster. After some previous education, he went, in 1605, to the university of Marpurg, and then to Strasburg, where he studied medicine. He subsequently removed to Basle, and took the degree of M.D., having previously travelled in France, Italy, Holland and England. In 1613, he returned to his native country, and was made professor of the belles-lettres in the university of Copenhagen. In 1615, he was transferred to the chair of Greek literature, and, in 1624, to that of physic, which he held till his death. His academical engagements did not prevent him from practising as a physician; and the reputation of his skill occasioned his being employed by his sovereign, Christiern IV., who, in recompense of his services, made him a canon of the cathedral of Lund. His death took place in 1654. He was the author of several works relative to his profession, and also wrote in defence of the Aristotelian philosophy, but his most important productions are those concerning the antiquities of Denmark and Norway, among which may be mentioned *Fasti Danici*; *Literatura Danica Antiquissima*; *Monumentorum Danicorum Libri sex*; *Lexicon Runicum*; and *Series Regum Daniæ*.

WORMS; an old German city on the left bank of the Rhine, formerly one of the free imperial cities. By the peace of Luneville, in 1801, it was ceded, with the whole left bank of the Rhine, to France; and since the peace of Paris, it has belonged to the province of Rhenish Hesse in Hesse-Darmstadt. It lies in an agreeable and fertile country, the Wonnegau (*land of joy*), so much praised by the *Minnesingers* (q. v.), and contains a population of 8000 inhabitants, who are supported chiefly by the cultivation of the vine, and the navigation of the Rhine. There are also some manufactures. The Protestant religion is the prevailing one. The Catholics have two churches, one of which is the cathedral, of which the foundation was laid in the eighth century, but which was not finished until the twelfth century. It is about 740 feet long, and 29 feet wide. The Lutherans have two churches, and the Reformed or Calvinists one. Among several excellent sorts of wine made here, the *Liebfrauenmilch* (milk of our dear lady) is distinguished. The grapes grow around the church of Our Lady, from which it has its name. Worms is one of the most ancient cities of Germany, and one of the most distinguished in the early history of the country. The Romans had a colony here and the early Frankish kings, and even Charlemagne and the later Carlovingians, spent much time here. At a later period, it was the seat of the Rheno-Frankish dukes. In the history of the middle ages and that of modern times, Worms is also conspicuous. Many diets have been held here, of which those of 1495 and 1521 are the principal. The two held in the former year did much to establish order in Germany. At the latter, Luther defended his faith boldly before the emperor and the assembled members of the empire, concluding his address with the words, "Here I stand; I cannot do otherwise: so help me God! amen." Worms derived importance also from its manufactures, commerce, and population, which, even towards the end of the thirty years' war, amounted to 30,0 souls, and, as a member of the confederation of the Rhenish cities, was engaged in the principal quarrels with the neighbouring princes. It has declined during the two last centuries, particularly on account of the endless wars between Germany and France. In 1689, this city, as well as Spires, was also entirely destroyed by the French, by the orders of Louvois. The city has been since rebuilt; yet there are even now many gardens where formerly there were buildings. In the early part of the French revolutionary war, Worms again suffered much, being occupied alternately by both the hostile armies. Worms was formerly a bishop's see, the prince-bishop of which was always the archbishop of Mayence.

WORMWOOD (*artemisia*); a genus of compound flowers, which may be recognised by the dissected and usually downy leaves, and the small roundish heads of flowers. The common species (*A. absinthium*) is tonic, anthelmintic, stomachic, and slightly stimulating, and has been used with advantage in intermittents, gout, scurvy and dropsy. The seed is used by the rectifiers of British spirits, and the plant is a good deal cultivated in certain parts of England for this purpose. The leaves and points of the shoots of the tarragon (*A. dracunculus*) are used as an ingredient in pickles. A simple infusion of the plant in vinegar makes a pleasant fish sauce: it is eaten along with beef-steaks, and is employed, both in Europe and Persia, to correct the coldness of salad herbs, and season soups and other dishes. The plant is of the easiest culture, but, like the other species, requires a dry soil. From the acrid leaves of *A. Chinensis*, moxa is obtained—a substance much in use among the Chinese as an actual cautery. For this purpose, the moxa is laid upon the part affected, and set on fire. Numerous species of *artemisia* are found upon the plains of Missouri.

WORONZOFF; a distinguished Russian family. Three females belonging to it are conspicuous in Russian history:—1. *Elizabeth Woronzoff;* the mistress of the grand prince, afterwards emperor Peter III. She subsequently married the senator Polianski. 2. The countess *Butterlin*. 3. The princess *Daschkoff*, for some time the confidant of Catharine II. She took a very active part in the dethroning of the emperor, whose mistress her sister was, and in the elevation of Catharine to the throne. The uncle of these two, the high chancellor count Michael Woronzoff, was the head of the Swedish party, and the enemy of the chancellor Bestuscheff, the head of the Danish party. When the latter fell into disgrace, in 1757, count Woronzoff was made chancellor of the empire. Count Alexander Woronzoff was made, in 1802, chancellor of the empire by the emperor Alexander, and received the direction of the department of foreign affairs. His brother, S. Woronzoff, was Russian ambassador in London when the French revolution broke out, and took an active part in all the negotiations between England and Russia during the reigns of Catharine, Paul I. and Alexander. He died in London in June, 1832. His son, *Michael Woronzoff*, is governor of New Russia (residing at Odessa). He was a general of infantry in the wars of his country in 1813, 1814 and 1815, against France. In 1826, he was deputed by the emperor Nicholas, with Ribeaupierre, to negotiate, at Akerman, with the Turkish commissioners, respecting the misunderstandings between Russia and the Porte.

WORSHIP OF GOD. The expression of veneration for the highest of beings, of submission to his will, and of thankfulness for his goodness, though it may be offered in the secret stillness of the heart, will often be conveyed by external visible signs, through which the feelings of awe and love endeavour to manifest themselves in the most forcible and lively manner. These acts of homage to a superior power will be characterized by more or less of rudeness or elevation, as the conceptions of the object of worship are more or less gross or spiritual. Prayer and sacrifice, accompanied with various ceremonies, are the most general external acts, by which the feelings of religious veneration are expressed; and while some nations and sects are eager to surround these acts with all the splendour of earthly pomp, others think to render them more worthy of the Being to whom they are addressed, by the absence of all worldly show. If the worship of God, says Paley, be a duty of religion, public worship is a necessary institution; because without it the greater part of mankind would exercise no religious worship at all. Besides, assemblies appointed for this purpose afford regularly recurring opportunities for moral and religious instruction to those who would otherwise receive no such instruction. If we advert to facts, it will be found that the general diffusion of religious knowledge among all orders of Christians, compared with the intellectual condition of barbarous nations, can be ascribed to no other cause than the regular establishment of assemblies for divine worship; in which portions of Scripture are recited and explained, or the principles of Christian erudition are so constantly taught in sermons, incorporated with liturgies, or expressed in extempore prayer, as to imprint, by the very repetition, some knowledge and memory of these subjects upon the most unqualified and careless hearer. But while the different forms of Christian worship resemble each other in their fundamental principle, there is almost every variety in the details of the ceremony; and there have been not less violent controversies and causes of offence, afforded by different views of the ceremonial arrangements of worship, than by differences of opinion in matters of dogmatical theology or ecclesiastical government. The heathens objected to the early Christians, that their worship had none of the external splendour of other religions—no temple, no altars, no images. The primitive Christians assembled together in social worship, but they did not attribute any peculiar sanctity to the spot of their meeting, which, in fact, was commonly the house of one of the congregation. In the course of time, however, as they became more numerous, they met in rooms or buildings appropriated for the purpose. When the congregation was assembled, the first act of divine service performed was the reading of the Holy Scriptures, as was the custom in the Jewish synagogues. At first, the Old Testament was of course alone used for this purpose; but in process of time, as the books of the New Testament were composed, these were also read in the churches. The reading of the Scriptures was followed by a short and familiar address, explaining and applying what had been read, and exhorting the hearers to piety and virtue, and by the singing of psalms or hymns, selected from the Scriptures, or composed for the purpose. The congregation then rose up, and joined in prayer, with their faces turned towards the east. It is a subject of dispute whether precomposed forms or extempore effusions were used in prayer. See *Liturgy*, *Mass*, *Lord's Supper*, &c.

Worship, Minister of Public (in French, *Ministre du Culte;* in Prussia, *Minister des Cultus*). In those countries in which the direction of every thing is in the executive, and the whole action of society is regulated by the government (a system more consistently and effectually pursued in Prussia than, probably, in any other country), not only the administration of justice, but even of religious worship, is under the superintendence of a minister—an abuse which at one time was carried to a great extreme in Prussia. There is still in that country a "minister for the supervision of ecclesiastical affairs, of schools, and medicine." The use of the word *cultus* has been discontinued. The minister of public worship, however, does not superintend merely the forms of religious worship, but all ecclesiastical affairs. He appoints the various examinations which candidates for the ministry must pass through before they can be admitted to holy orders; investigates complaints against clergymen, or directs inquiries to be made, &c.; settles disputes between Catholics and Protestants, &c. In France, the ministry of public instruction is generally connected with that of the "*culte*," which latter has the management of ecclesiastical affairs in as far as they have a political character (in other respects they are under the control of the bishops, &c.). These two departments, however, are not always connected.

WORSLEY, Sir Richard, son of Sir Thomas Worsley, born in 1751, in the Isle of Wight, succeeded to the title in his eighteenth year, and soon after visited the continent, where he cultivated his taste for antiquities by the study of the remains of ancient Rome, and made some large purchases of statues, marbles, and other articles of *virtù*, which, on his return to England, it formed his principal amusement to classify and arrange. A catalogue of this collection was afterwards published under the title of *Musæum Worsleianum*, in two folio volumes. (See *Visconti.*) Sir Richard published a History of the Isle of Wight (in 1 vol., 4to., with engravings of the principal seats, views, &c., by Godfrey). He was many years in parliament as representative of the borough of Newport, and held a situation about the person of king George III., as comptroller of the royal household. He was also governor of the island, where he died in 1805.

WORSTED; a thread spun of wool that has been combed, and which, in the spinning, is twisted harder than ordinarily. It is chiefly used either to be knit or woven into stockings, caps, gloves, &c. Worsted has obtained its name from Worstead, a market-town in the county of Norfolk, (population 830), where the manufacture of the article was first introduced. The manufactures, which derived their name from the place, are now removed to Norwich and its vicinity.

WORT. See *Brewing*, and *Malt*.

WOTTON, Sir Henry, a conspicuous political and literary character in his own age, youngest son of Sir Robert Wotton, was born in 1568. After receiving a classical education at Winchester school, he was entered at Oxford, where he much distinguished himself by his attention to logic and philosophy, and composed a tragedy. Having studied civil law, under an eminent Italian professor, he became a proficient in the Italian language. His father bequeathing him a moderate income, he determined, in 1589, to travel, and visited all the principal countries of the continent. On his return, he was appointed secretary to the earl of Essex, whom he attended in his maritime expeditions against the Spaniards, and afterwards to Ireland. On the fall of that nobleman, he quitted the kingdom, and resided at Florence, where he composed a treatise, printed after his death, entitl the State of Christendom. While thus employed the grand-duke of Tuscany having intercepted so letters disclosing a plot to take away the life o James, king of Scotland, he engaged Wotton t carry secret intelligence of it to that prince. Th service he ably performed in the character and gu of an Italian, and returned to Florence. Wh James came to the English crown, he sent for Wot ton, knighted him, and, in 1604, employed him a an ambassador to the republic of Venice. As Wot ton passed through Augsburg, being desired to wri in an album, he wrote, in Latin, that "an ambas sador is a good man, sent abroad to lie for the goo of his country." This innocent sally was, by th malignity of Schioppius, represented as a sta maxim, avowed by the religion of the king of Eng land. James, who thought nothing relative eithe to king-craft or state-craft a subject for wit, wa in consequence, highly displeased; and, on his re turn, Wotton remained five years unemployed. A length he recovered the royal favour, and wa trusted with a mission to the United Provinc and subsequently restored to his former post a Venice, where he remained three years. Othe missions followed, to the duke of Savoy, and t various princes in Germany, on the affairs of th elector palatine. A third embassy to Venice clo his diplomatic labours, from which he did not re turn until the death of James, when, in 1624 h was made provost of Eton college, as a reward fo his various services. The first fruits of his lei were his Elements of Architecture. The statute of the college requiring him to assume a cleri character, he took deacon's orders, and spent th remainder of his life in literary leisure, social ho pitality, and innocent amusement. He had plann a life of Luther; but, by the persuasion of Charl I., he laid it aside for a history of England, i which he made very little progress. The arrea of his demands on the crown remaining unpaid, h continued embarrassed to his death, which too place in December, 1639, in the seventy-sec year of his age. Sir Henry Wotton was a pers of sound understanding, poignant wit, and great a complishments, in whom the scholar and the ma of the world were very happily blended. In add tion to the works already mentioned, there is collection of miscellanies published, after his deat under the title of *Reliquiæ Wottonianæ*, seve times reprinted. It consists of lives, letters, poe and characters, displaying a lively fancy and pen trating understanding, though somewhat obscur by the pedantry of the age. Of his poems, on entitled a Hymn to God in my latter Sickness, admired for energy of expression and harmony versification. There is a Life of Sir H. Wott by Walton.

WOTTON, William, an English clergyma distinguished learning, was born in 1666, and, u der his father's tuition, acquired such a knowled of languages, during his childhood, as caused him be regarded as the wonder of the time. In his six year, he could construe the Latin, Greek, and H brew tongues, chiefly by the aid of an extraordina retentive memory. In consequence of this pre city, he was entered at Catherine hall, Cambrid before he was ten years old. He took the deg of bachelor of arts in his thirteenth year, some ti before which he had been celebrated in a copy verses, not only for his acquaintance with learned languages, including Arabic, Syriac, Chaldee, but for his knowledge of geography, logic, philosophy, and mathematics. In 1691, he was made chaplain to the earl of Nottingham, who, in 1693, presented him to a rectory. The first fruit of his extensive reading appeared in 1694, in his Reflections upon Ancient and Modern Learning, the plan of which was to institute a comparison between the ancients and moderns, in all that regarded arts, science, and literature. To a second edition, in 1697, was annexed doctor Bentley's Dissertation on Phalaris, which involved Wotton in the controversy respecting the merits of the ancients and the moderns, and subjected him to the satire of Swift, in the Battle of the Books. Embarrassed in circumstances, in consequence of some irregularities, he was obliged, in 1714, to retire into South Wales, where he employed himself in writing on ecclesiastical antiquities and kindred subjects. He also wrote various other pieces, but none which made any addition to his fame: and he may be enumerated among the instances in which early proficiency, resting principally on strength of memory, disappoints expectation. He died in 1726, at the age of sixty.

WOU WOU. See *Ape*.

WOUNDS are divided, by writers on surgery, into several kinds, the distinctions being founded either upon the sort of weapon with which the injury has been inflicted, or upon the circumstance of a venomous matter having been introduced into the part, or, lastly, upon the nature of the wounded parts themselves, and the particular situation of the wound. Hence, we have *cuts*, *incisions*, or *incised wounds*, which are produced by sharp-edged instruments, and are generally free from all contusion and laceration. The fibres and texture of the wounded part have suffered no other injury but their mere division; and there is, consequently, less tendency to inflammation, suppuration, gangrene, and other bad consequences, than in the generality of other species of wounds. Incised wounds also, may usually be healed with greater quickness and facility than other wounds which are accompanied with more or less of contusion and laceration: the surgeon has only to bring the opposite sides of the wound into contact with each other, and keep them in this state a few hours,and they will unite and grow together. Another class of wounds are *stabs*, or *punctured wounds*, made by the thrusts of pointed weapons, as bayonets, lances, swords, daggers, &c., and also by the accidental and forcible introduction of considerable thorns, nails, &c., into the flesh. These wounds frequently penetrate to a great depth so as to injure large blood-vessels, viscera, and other organs of importance: and, as they are generally inflicted with much force and violence, the parts suffer more injury than what would result from their simple division. It also deserves notice that a great number of the weapons or instruments by which punctured wounds are occasioned, increase generally in diameter from the point towards their other extremity; and hence, when they penetrate &c., they must force the fibres asunder like a wedge, and cause a serious degree of stretching and contusion. It is on this account that bayonet wounds of the very soft parts are ordinarily often followed by violent inflammation, an alarming degree of tumefaction, large abscesses, fever, delirium, and other very unfavourable symptoms. The opening which the point of such a weapon makes is quite inadequate to the passage of the thicker part of it, which can only enter by forcibly dilating, stretching, and otherwise injuring the fibres of the wounded flesh. A third description of wounds are the *contused* and *lacerated*, which strictly comprehend, together with a variety of cases produced by the violent application of hard, blunt, obtuse bodies to the soft parts, all those interesting and common injuries denominated *gunshot* wounds. Many bites rank also as contused and lacerated wounds. In short, every solution of continuity which is suddenly produced in the soft parts by a blunt instrument or weapon which has neither a sharp point nor edge, must be a contused, lacerated wound. It has been remarked that, in case of violent death by gunshot wounds, the expression of the countenance is always that of languor, whatever may be the natural energy of the sufferer's character; but in death from a stab, the countenance preserves its traits of feeling or ferocity and the mind its bias, to the last. See *Surgery*.

Poisoned wounds are those which are complicated with the introduction of a venomous matter or fluid into the part. Thus, the stings and bites of a variety of insects afford us examples of poisoned wounds; and the surgeon, in the dissection of putrid bodies, or in handling instruments infected with any venomous matter, is exposed to the danger of poisoned wounds from cuts. The most dangerous, however, of this class of wounds, occur from the bites of the viper, the rattlesnake, &c. (see *Venomous Animals*), or from those of rabid animals. (See *Hydrophobia*.) Wounds may, likewise, be universally referred to two other general classes, the simple and complicated. A wound is called *simple* when it occurs in a healthy subject, has been produced by a clean, sharp-edged instrument, is unattended with any serious symptoms, and the only indication is to reunite the fresh-cut surfaces. A wound, on the contrary, is said to be *complicated* whenever the state of the whole system, or of the wounded part, or the wound itself, is such as to make it necessary for the surgeon to deviate from the plan of treatment requisite for a simple wound. The differences of complicated wounds must, therefore, be very numerous, as they depend upon many incidental circumstances, the principal of which, however, are hemorrhage, nervous symptoms, contusion, the unfavourable shape of the injury, the discharge or extravasation of certain fluids, indicating the injury of particular bowels or vessels, &c. All large or deep wounds are attended with more or less of symtomatic fever, which usually comes on at a period varying from sixteen to thirty-six hours after the infliction of the injury, and is generally of the inflammatory, but sometimes of an asthenic character. It is of great consequence to attend to the type of this fever in the treatment; for the loss of blood, which may be required and sustained with impunity in the one species of fever, may prove most injurious, if not fatal, in the other.

WOURALI POISON. Waterton, the eccentric wanderer in South America, gives the following interesting account of the method pursued by the Indians in making wourali poison, a species of matter of the most powerful action on animal life, but which destroys life so gently, that the victim appears to be in no pain whatever; and probably, says he, were the truth known, it feels none, saving the momentary smart at the time the arrow enters. A day or two before the Macoushi Indian prepares his poison, he goes into the forest in quest of the ingredients. A vine grows in these wilds which is called wourali, and it is from this that the poison takes its name, and it is the principal ingredient. When he has procured enough of this, he digs up a root of a very bitter taste, ties them together, and then looks about for two kinds of bulbous plants, which contain a green and glutinous juice. He fills a little vessel, which he carries on his back, with the stalks of these, and lastly, ranges up and down till he finds two species of ants; one of them is very large and black, and so venomous, that its sting produces a fever. It is most commonly to be met with on the ground. The other is a little red ant, which stings like a nettle, and generally has its nest under the leaf of a shrub. After obtaining these, he has no more need to range the forest. A quantity of the strongest Indian pepper is used; but this he has already planted round his hut. The pounded fangs of the Labarri snake, and those of the Connacouchi, are likewise added. These he commonly has in store; for, when he kills a snake, he generally extracts the fangs and keeps them by him. Having thus found the necessary ingredients, he scrapes the wourali vine and bitter root into thin shavings, and puts them into a kind of colander made of leaves; this he holds over an earthen pot, and pours water on the shavings; the liquor which comes through has the appearance of coffee. When a sufficient quantity has been procured, the shavings are thrown aside. He then bruises the bulbous stalks, and squeezes a proportionate quantity of their juice through his hands into the pot. Lastly, the snake's fangs, ants, and pepper, are bruised and thrown into it. It is then placed on a slow fire, and as it boils, more of the juice of the wourali is added, according as it may be found necessary, and the scum is taken off with a leaf. It remains on the fire till reduced to a thick scum of a deep brown colour. As soon as it has arrived at this state, a few arrows are poisoned with it to try its strength. If it answer the expectations, it is poured out into a calabash, or little pot of Indian manufacture, which is carefully covered with a couple of leaves, and over them a piece of deer's skin, tied round with a cord. They keep it in the most dry part of the hut, and from time to time suspend it over the fire to counteract the effects of dampness.

Among the instances adduced of the extraordinary effects of wourali poison, Waterton mentions the following:—A large well-fed ox, from nine hundred to a thousand pounds weight, was led to a stake by a rope sufficiently strong to allow him to move to and fro. In order to bring him down, three poisoned arrows were put into him; one was sent into each thigh, just above the hock, in order to avoid wounding a vital part, and a third was shot traversely into the extremity of the nostril. The poison seemed to take effect in four minutes. Conscious as though he would fall, the ox set himself firmly on his legs, and remained quite still in the same place, till about the fourteenth minute, when he smelled the ground, and appeared as if inclined to walk. He advanced a pace or two, staggered and fell, and remained extended on his side, with his head on the ground. His eye, a few minutes ago so bright and lively, now became fixed and dim; and though you put your hand close to it as if to give him a blow there, he never closed his eyelid. His legs were convulsed, and his head from time to time started involuntarily; but he never showed the least desire to raise it from the ground. He breathed hard, and emitted foam from his mouth. The startings, or subsaltus tendinum, now became gradually weaker and weaker; his hinder parts were fixed in death; and in a minute or two more, his head and fore-leg ceased to act. Nothing now remained to show that life was still within him, except that his heart faintly beat and fluttered at intervals. In five-and-twenty minutes from the time of his being wounded he was quite dead. His flesh was very sweet and savoury at dinner.

WOUVERMANS, Philip, was born at Haarlem, in 1620, and was the son of Paul Wouvermans, a painter of history, of mean talents, who taught him the rudiments of the art; after which he became the scholar of John Wynants, and arrived at such a degree of perfection as to be esteemed superior to all his contemporaries. By the instruction and example of his master, the proficiency of Wouvermans was very remarkable; but to the knowledge of colouring and penciling which he acquired in that school, he added the study of nature, in which he employed himself with such critical attention, as to excel his master in the choice of his scenes, the excellence of his figures, and the truth of his representations. The subjects of which he seemed most particularly fond, were huntings, hawkings, encampments of armies, farriers' shops, and all kinds of scenes that afforded him a proper and natural opportunity of introducing horses, which he painted in the greatest perfection. In contemplating the works of this inimitable artist, we find ourselves at a loss to determine what part is most worthy of our applause and admiration; whether the sweetness of the colouring; the correctness of his design, his cattle, or his figures; the charming variety of attitudes in his horses; the free and yet delicate touchings of his trees; the beautiful choice of his scenery; the judicious use he makes of the chiaro-oscuro; or the spirit that animates the whole. His genius and invention were so strong and lively, that none of his pictures have either the same grounds or the same distances; for he varied them perpetually, with inexpressible skill; in some, representing simple, unembellished nature, and in others, scenes enriched with architecture, fountains, or edifices of a beautiful construction. His figures are always finely drawn with expressions suitable to the subject; and the attitudes he chose were such as appeared unconstrained, natural, and perfectly agreeable. He had an amazing command of his pencil, so that he instantly and effectually expressed every idea conceived in his mind, and gave to his pictures an astonishing force, by broad masses of light and shadow, which he contrasted with peculiar judgment, and gave an uncommon degree of transparence to the colouring of the whole. The pencil of Wouvermans was mellow, and his touch was free. Though his pictures were finished most delicately, his distances recede with true perspective beauty, and his skies, and trees and plants are all exact and lovely imitations of nature. In his latter time, his pictures had rather too much of the grayish and blue tint; but, in his best days, he was not inferior, either in correctness, colouring or force, to any of the artists of Italy. Yet, notwithstanding his uncommon merit, he had not the good fortune, during his life, to meet with encouragement equal to his desert; for, with all his assiduity and extreme industry, he found it difficult to maintain himself and his family. He seemed to be a stranger to the artifices of the merchants, who therefore imposed on him under the disguise of zeal for his interest, and, while they artfully enriched themselves by his works, contrived to keep him depressed and narrow in his circumstances. Wouvermans could not help feeling the neglect with which he was treated; and it affected him so strongly, that, a few hours before he died, he ordered a box filled with his studies to be burned; saying, "I have been so badly rewarded for all my labours, that I would prevent my son from being allured, by those designs, to embrace so miserable and uncertain a profession as mine." Some authors, however, ascribe this sacrifice to other motives, and say it proceeded from his dislike to his brother Peter, being unwilling that he should reap the product of his labours; and some again allege that he intended to compel his son to seek the knowledge of nature from his own industry, and not indolently depend on copying those designs. Wouvermans etched one plate, representing a horse standing, and tied to a tree. It is beautifully done, but uncommonly scarce. He died in 1668. After the death of Wouvermans, the value of his pictures increased to an incredible degree; they were universally coveted through every part of Europe, particularly by the dauphin of France and the elector of Bavaria, who bought all that could be procured, at very large prices.

WRANGEL, CHARLES GUSTAVUS, count of, Swedish field-marshal, a distinguished military commander of the seventeenth century, was descended from an old and illustrious Swedish family.—His father, *Herman Wrangel*, a Swedish counsellor of state, and field-marshal, was governor of Livonia at the time of his death, in 1644. The son, Charles Gustavus, entered the military service at an early age, and was brought up in the school of the celebrated Gustavus Adolphus. Under that prince he served in Germany; and, on the death of general Baner, in 1641, Wrangel, who then had the rank of major-general, was one of those who commanded the Swedish forces, under very difficult circumstances, until the arrival of the new commander-in-chief, Torstenson. Wrangel continued to serve under that general, and accompanied him on his daring march to Holstein (1643), to carry the war into Denmark. (See *Thirty Years' War.*) After the death of admiral Fleming, the command of the Swedish fleet was confined to Wrangel, who was at first obliged to yield to the numerical superiority of the Danish naval force; but being reinforced by a Dutch squadron, he defeated the enemy off the island of Femern. He then commanded a detached corps in Holstein and Sleswick, until the peace of Brömsebrö (1645). In 1646, Torstenson having resigned the command, Wrangel was associated with Königsmark in that trust, and, having formed a junction with the French forces under Turenne, their combined operations forced the elector of Bavaria to accede to an armistice, at Ulm, in March, 1647. The elector having afterwards disavowed this act, the allied forces defeated the combined Austrian and Bavarian armies at Zusmarshausen, near Augsburg, May 17, 1648; and Wrangel occupied Bavaria until the peace of Westphalia, in 1648, put an end to hostilities. After the accession of Charles Gustavus to the throne of Sweden, Wrangel accompanied his sovereign in the expedition against Poland, and was present at the celebrated three days' battle of Warsaw (July 18—20, 1656). In the course of this war, Denmark having entered upon hostilities against Sweden (1657), Wrangel laid siege to the fortress of Kronburg, which was obliged to surrender after twenty-one days (September 6, 1658). He then took command of the Swedish fleet destined to attack Copenhagen; but the expedition proved unsuccessful, on account of the arrival of a Dutch fleet to the assistance of the Danes. The death of the king of Sweden put an end to the war in 1660. In 1674, Louis XIV. having declared war against the German empire, Sweden engaged in the hostile operations on the side of France, and Wrangel commanded an army of 16,000 men, which invaded Brandenburg; but the ill success of this expedition is probably to be imputed to the sickness of the commander. The great elector, Frederic William, at the head of 6000 cavalry, attacked the Swedish forces by surprise, and gained a complete victory at Fehrbellin, June 18, 1675. The Swedes were obliged to evacuate Brandenburg, and even lost a part of Pomerania. Wrangel, who soon after retired from service on account of his infirmities, died the following year. In 1645, he had been rewarded for his services with the title of count.

WRANGLER, SENIOR, in the university of Cambridge; the student who passes the best examination in the senate-house for the first degree (that of bachelor) in arts. (See *Cambridge*.) They who follow next in the same division, are respectively termed *second, third, fourth*, &c., *wranglers*. In a similar manner, they who compose the second rank of honours are designated as *first, second, third*, &c., *optimi* (best); those of the third order, *first, second, third*, &c., *junior optimi* (second best); and the remainder are termed *οἱ πολλοί* (the mob).

WRAXALL, SIR NATHANIEL WILLIAM, born in 1751, at Bristol, where his father and grandfather were merchants, was educated in his native city, and, in 1769, was sent to Bombay, in the service of the East India company. He was there employed, in 1771, as judge advocate and paymaster of the forces of that presidency. Next year he returned to England, and then travelled on the continent, visiting almost every country from Lapland to Lisbon. On his return, he sent to the press a Voyage round the Baltic (1775). In 1777, he published the History of the Kings of France, of the House of Valois (2 vols., 8vo.), and History of the Reign and Age of Henry III. and IV., Kings of France (3 vols. quarto). In 1780, he was elected member of parliament for the borough of Hindon, in 1784, for Lugershall, and, in 1760, for Wallingford. His Memoirs of the Courts of Berlin, Dresden, Warsaw, and Vienna, were given to the world in 1799. While in parliament, he sometimes opposed Mr Pitt, and at other times supported him. In 1813, he was raised to the dignity of a baronet, and, in 1815, published his last work, under the title of Historical Memoirs of His Own Time (2 vols., 8vo.). A story was introduced into this work respecting count Woronzow, the Russian ambassador, the truth of which the count denied; and, deeming the publication to be libellous, he had recourse to a criminal prosecution. It was tried in the court of king's bench, and Sir Nathaniel was found guilty, and sentenced to a fine and six months' imprisonment. He died in 1831.

WREATH, in heraldry; a roll of fine linen or silk (like that of a Turkish turban), consisting of the colours borne in the escutcheon, placed in an achievement between the helmet and the crest, and immediately supporting the crest.

WRECK, in navigation, is usually understood to mean any ship or goods driven ashore, or found floating at sea in a deserted or unmanageable condition; but, in the legal sense of the word in England, *wreck* must have come to land: when at sea, it is distinguished by the barbarous appellations of *flotsam*, *jetsam*, and *ligan*. (See *Flotsam*.) In nothing, perhaps, has the beneficial influence of the advance of society in civilization been more apparent than in the regulations with respect to the persons and property of shipwrecked individuals. In most rude and uncivilized countries, their treatment has been cruel in the extreme. Amongst the early Greeks and Romans, strangers and enemies were regarded in the same point of view. (*Hostis apud antiquos, peregrinus dicebatur.—Pomp. Festus*; see also Cicero, *De Offic.* lib. i. c. 12.) Where such inhospitable sentiments prevailed, the conduct observed towards those that were shipwrecked could not be otherwise than barbarous; and, in fact, they were, in most instances, either put to death or sold as slaves. But, as law and good order grew up, and commerce and navigation were extended, those who escaped from the perils of the sea were treated in a way less repugnant to the dictates of humanity; and at length the Roman law made it a capital offence to destroy persons shipwrecked, or to prevent their saving the ship; and the stealing even of a plank from a vessel shipwrecked, or in distress, made the party liable to answer for the whole ship and cargo. (*Pand.* 47. 9. 3.) During the gloomy period which followed the subversion of the Roman empire, and the establishment of the northern nations in the southern parts of Europe, the ancient barbarous practices with respect to shipwreck were every where renewed. Those who survived were, in most countries, reduced to servitude; and their goods were every where confiscated for the use of the lord on whose manor they had been thrown. (Robertson's *Charles V.*, vol. i, note 29.) But nothing, perhaps, can so strongly evince the prevalence and nature of these enormities as the efforts that were made, as soon as governments began to acquire authority, for their suppression. The regulations as to shipwreck, in the laws of Oleron, are, in this respect, most remarkable. The 35th and 38th articles state, that "Pilots, in order to ingratiate themselves with their lords, did, like faithless and treacherous villains, sometimes willingly run the ship upon the rocks, &c.;" for which offence they are held to be accursed and excommunicated, and punished as thieves and robbers. The fate of the lord is still more severe. "He is to be apprehended, his goods confiscated and sold, and himself fastened to a post or stake in the midst of his own mansion house, which being fired at the four corners, all shall be burned together, the walls thereof be demolished, the stones pulled down, and the site converted into a market-place, for the sale only of hogs and swine, to all posterity." The 31st article recites, that, when a vessel was lost by running on shore, and the mariners had landed, they often, instead of meeting with help, "were attacked by people more barbarous, cruel and inhuman than mad dogs; who, to gain their moneys, apparel, and other goods, did sometimes murder and destroy these poor distressed seamen. In this case, the lord of the country is to execute justice by punishing them in their persons and their estates, and is commanded to plunge them in the sea till they be half dead, and then to have them drawn forth out of the sea, and stoned to death." Such were the dreadful severities by which it was attempted to put a stop to the crimes against which they were directed. The violence of the remedy shows, better than any thing else, how inveterate the disease had become. The law of England, like that of other modern countries, adjudged wrecks to belong to the king; but the rigour and injustice of this law was modified as early as the reign of Henry I., when it was ruled, that, if any person escaped alive out of the ship, it should be no wreck: and, after various modifications, it was decided, in the reign of Henry III., that if goods were cast on shore, having any marks by which they could be identified, they were to revert to the owners, if claimed any time within a year and a day. By the statute 27 Edw. III., c. 13, if a ship be lost, and the goods come to land, they are to be delivered to the merchants, paying only a reasonable reward or salvage to those who saved or preserved them. But these ancient statutes, owing to the confusion and disorder of the times, were very ill enforced, and the disgraceful practices previously alluded to continued to the middle of the last century. A statute of Anne (12 Ann. st. 2, c. 18), confirmed by the 4 Geo. I., c. 12, in order to put a stop to the atrocities in question, orders all head officers, and others of the towns near the sea, upon application made of them, to summon as many hands as are necessary, and send them to the relief of any ship in distress, on forfeiture of £100; and in case of assistance given, salvage is to be assessed by three justices, and paid by the owners. Persons secreting any goods cast ashore, are to forfeit treble their value; and if they wilfully do any act whereby the ship is lost or destroyed, they are guilty of felony without benefit of clergy. But even this statute seems not to have been sufficient to accomplish the end in view: and, in 1752, a new statute (26 Geo. II., c. 19) was enacted, the preamble of which is as follows:—"Whereas, notwithstanding the good and salutary laws now in being against plundering and destroying vessels in distress, and against taking away shipwrecked, lost or stranded goods, many wicked enormities have been committed, to the disgrace of the nation, and the grievous damage of merchants and mariners of our own and other countries, be it, &c.;" and it is then enacted, that the preventing the escape of any person endeavouring to save his life, or wounding him with intent to destroy him, or putting out false lights in order to bring any vessel into danger, shall be capital felonies. By the same statute, the pilfering of any goods cast ashore, is made petty larceny. By statute 1 and 2 Geo. IV., c. 75, it is enacted that any person or persons wilfully cutting away, injuring or concealing any buoy or buoy-rope attached to any anchor or cable belonging to any ship, whether in distress or otherwise, shall be judged guilty of felony and may, upon conviction, be transported for seven years. The salvage, or the amount to be paid to those who have assisted in saving the wreck, is determined by the court of admiralty, who proportion the allowance to the risk and labour incurred. Sometimes as much as half the value of the property saved has been allowed. For salvage in cases of recapture, see *prize*.

WREN (*troglodytes*); a genus of birds, closely allied to the warblers, distinguished by their small size, slender beak, short and rounded wings, mottled plumage, and the habit of holding the tail elevated. The common wren is, with the exception of the golden-crowned wren, the smallest bird in Europe. It is fond of prying about crevices and holes in walls, ruined buildings, &c., and is constantly in motion, searching for insects, which form its accustomed food. It nestles in similar situations, a even under the eaves of houses. It braves the severest winters, and, like the golden-crowned wren, is resident even in Zetland. It sings sweetly in spring.

The golden-crowned wren is distinguished by an orange crown. Its length is 4½ inches, breadth, 6¼; weight under 80 grains. The weight of the common wren is nearly 3 drams. The most usual haunts of the golden-crowned wren are tall trees, particularly the oak, the yew, and the various species of pine and fir. In these it builds its nest, a very neat and elegant structure, the shape of which varies according to the situation in which it is placed. It is most commonly open at the top, like that of the chaffinch; but sometimes, even under the sheltering boughs of a Norway fir, it is covered with a dome, and has an opening on one side. It is always ingeniously suspended beneath the branch, like those of many tropical birds, being the only instance of the kind amongst those of Great Britain. The eggs are nine or ten in number, and are small, round, and white. The golden-crowned wren is by no means so shy of the neighbourhood of man as is generally supposed. Though it abounds in forests, yet it equally frequents gardens, occasionally even in the suburbs of large towns, and very often builds close to the house, most commonly in a yew or fir, at the height of from five to twenty or thirty feet from the ground. It is very fearless of observers; and will allow you to approach within a yard of it, while engaged, as it generally is, in hunting for insects on the stems and branches of trees. Perhaps the best time for watching it is a hot sunny day in summer or autumn. In a still and sultry noon, when not a leaf is stirring, and almost every other bird has retired from the heat of the sun into the shadiest thickets, the little solitary golden-crowned wren is to be seen flitting noiselessly from spray to spray, with unwearied activity, in search of its food, paying no attention to any one who happens to be watching it, and never for a moment remaining in a state of rest. Its movements are unlike those of any other bird, except, indeed, the blue-tit,—but even his do not equal in lightness and airiness this little wren. It flutters over the slenderest twigs like a butterfly,—now on one side, now on the other,—sometimes above the branch, sometimes beneath, hanging with the head downwards,—often at the end of it, suspended in the air by its tiny wings, which it quivers without the slightest sound, so that unless you see it, if it were ever so close to you, you would not be aware of its presence except for the little low chirp which it occasionally emits, and which is more like that of an insect than a bird. In shape and plumage, too, it is superior to most of the feathered inhabitants of our woods and gardens: the latter is a beautiful mixture of green and yellow, with white bars on its wings; and on its head the golden crest, bordered with black, from which it takes its name. In the spring and summer it sings regularly, beginning about the middle of March, and continuing till the end of July. Its song is very soft and low, like a whisper, and, like that of the grasshopper-lark, is no louder at the distance of one yard than of twenty. During the greater part of the year, it haunts tall trees, and never alights on the earth; but in the winter it is frequently seen pecking for insects on the grass, or among dead leaves, and even on a heath at some little distance from any tree; and when thus engaged it will let you approach it sufficiently near to hear the little snap of its beak when it has found its prey. There are two other species of wren common to this country—the yellow wren and the lesser pettychaps; the former so called from its colour, and the latter from its double notes, resembling the words *chip, chop*.

WREN, Sir Christopher, a celebrated English architect, was the son of the rector of East Knoyle, in Wiltshire, where he was born, in 1632. He entered as a student at Wadham college, Oxford, in 1646, previously to which time he had given proofs of his genius, by the invention of astronomical and pneumatic instruments. In 1647, he wrote a treatise on spherical trigonometry, upon a new plan, and, the following year, composed an algebraical tract on the Julian period. In 1653, he was chosen a fellow of the college of All-Souls. He was one of the earliest members of the philosophical society at Oxford, which was the origin of the royal society, after the institution of which, in 1663, he was elected a fellow, and distinguished himself by his activity in promoting the objects of that institution. In 1657, he was appointed professor of astronomy at Gresham college, but, on being nominated to the Savilian professorship of astronomy at Oxford, resigned the former office, and, in 1661, returned to the university. He received a commission, in 1663, to prepare designs for the restoration of St Paul's cathedral, then one of the most remarkable Gothic edifices in the kingdom. To prepare himself for the execution of this great undertaking, he made a visit to France in 1665, and then finished the designs; but while they were under consideration, the cathedral was destroyed by the fire of 1666, and the plan of repairing it was relinquished. Wren had now an opportunity for signalizing his talents by the erection of an entirely new structure. The contemporaneous destruction of fifty parochial churches and many public buildings, also furnished an ample field for his genius: and he would have had the honour of founding, as it were, a new city, if the design which he laid before the king and parliament could have been adopted; but private interests prevented its acceptance. On the death of Sir John Denham, in 1657, he succeeded to the office of surveyor of the works. He resigned his Savilian professorship in 1673. In 1674, he received the honour of knighthood; and, in the following year, the foundation of the new cathedral was laid. In 1680, he was chosen president of the royal society. In 1683, he was appointed architect, and one of the commissioners of Chelsea college; and, the following year, controller of the works at Windsor castle. He was elected member of parliament for the borough of Plympton, in 1685. To his other public trusts were added, in 1698, those of surveyor general and commissioner for the repair of Westminster abbey, and, in 1699, that of architect of Greenwich hospital. In 1700, he represented in parliament the boroughs of Weymouth and Melcombe Regis. In 1708, he was made one of the commissioners for the erection of fifty new churches, in and near the city of London. After having long been the highest ornament of his profession, he was, in 1718, deprived of the surveyorship of the royal works, from political motives. He was then in the eighty-fifth year of his life, the remainder of which was devoted to scientific pursuits and the study of the Scriptures. He died February 25, 1723. His remains were interred, with the requisite honours, under the choir of St Paul's cathedral; and on his tomb is a monumental inscription. It is as follows:—

Subtus conditur
Hujus Ecclesiæ et Urbis Conditor,
Christ. Wren;
Qui vixit Annos ultra nonaginta,
Non sibi sed Bono publico.
Lector, si Monumentum quæris,
Circumspice.

(Beneath is laid the builder of this church and city. who lived above ninety years, not for himself, but for the public good. Reader, if thou seekest his monument, look around.)

The edifices constructed by this architect were principally public, including a royal hunting seat at Winchester, and the modern part of the palace at Hampton Court. Some of the most remarkable of his buildings, besides St Paul's, are the monument on Fish street hill, the theatre at Oxford, the library of Trinity college, Cambridge; the hospitals of Chelsea and Greenwich; the church of St Stephen's, Walbrook; those of St Mary-le-Bow, St Michael, Cornhill, and St Bride, Fleet-street; and the great campanile of Christ-church, Oxford. Of his character as a man of science, we may accept the testimony of Newton, who, in his *Principia*, joins the names of Wren, Wallis, and Huygens, whom he styles *hujus ætatis geometrarum facilè principes* (the greatest geometricians of the age.) As an architect he possessed an inexhaustible fertility of invention, combined with good natural taste and profound knowledge of the principles of his art. His talents were particularly adapted to ecclesiastical architecture; in his palaces and private houses he has sometimes sunk into a heavy monotony, as at Hampton-court and Winchester. The interior of the church of St Stephen's, Walbrook, which has been considered as his *chef-d'œuvre*, exhibits a deviation from common forms equally ingenious and beautiful. The monument is grand and simple; and St Paul's cathedral, notwithstanding the severe criticisms to which it has been subjected, may be fairly reckoned among the most magnificent productions of architectural genius. Sir Christopher Wren's architecture is the perfection of that modern style, which, with forms and modes of construction essentially Gothic, adopts, for the purposes of decoration, the orders and ornaments of classical antiquity.—See *Parentalia, or Memoirs of the Family of the Wrens* (folio, 1750), published by his grandson, and Elmes's *Life of Wren* (4to.,1823).

WREXHAM; a populous and prosperous town in North Wales, in the county of Denbigh, 179 miles north-west of London. It was anciently called Wrightesham, by the Saxons, to whom its foundation is attributed, and from whom the inhabitants are supposed to derive their customs and language. The town consists of some good avenues, the High street, in front of the Wynnstay Arms, and terminated by a spacious town-hall, is the most respectable, and presents at all times a scene of trade, bustle, and animation. The church, the architectural boast of Wales, was erected in the reign of Henry VII., and is an exquisite specimen of the florid Gothic which began to prevail at that period. The tower attains a height of 140 feet, having three of its fronts adorned with whole-length figures occupying niches. The interior is by no means in keeping with the richness and decoration of the tower and sculptures of the outside of the chancel, but contains an ancient monument, inscribed with Saxon characters, and a noble design and work by Roubilliac, to the memory of Mary, daughter of Sir Richard Myddleton, of Chirk Castle. It represents the resurrection of the body in its last sad clothing, and the grave resigning its dead at the citation of the angel on the Day of Judgment. This design has since been repeatedly imitated. Wrexham is the great thoroughfare between Liverpool and Chester, and North Wales. The coaching establishments are numerous, and the travelling in consequence at moderate rates. The great fair, for all sorts of wares, goods, &c. commences on the 23d of March, and continues during one fortnight. It is attended by purchasers, chiefly small shop-keepers, from all parts of North Wales, and business is transacted on this occasion to a considerable extent. The flannel trade is less prosperous here than formerly, but an extensive trade is carried on in coal, iron, and lead, as well as in flour, wire-drawing, and paper-making. Population in 1831, 11,515.

WRIGHT, Joseph, a celebrated English painter, usually styled *Wright of Derby*, was born in that town, in 1734. In 1751, he was placed under Hudson, the most celebrated portrait painter of the day, although of very moderate talents. He then visited Italy, where he made great advances in his profession, and, in 1755, returned to England. Having resided first at Bath, but afterwards at Derby, employed in portrait painting, at a mature age he again visited Italy, and, on his return, in 1782, was elected an associate of the royal academy. His later pictures were chiefly landscapes, which are much admired for elegance of outline and judicious management of light and shade. A large landscape, a View of the Head of Ulleswater, stands at the head of his productions of this class; while, in the historical line, the Dead Soldier is sufficient to stamp him a fine painter. He fell a victim to his unwearied attention to his profession, dying of a decline, in 1797.

WRIGHT, Thomas; a captain in the British navy, whose fate has excited much discussion. Having been employed to land the conspirators George Cadoudal, Pichegru, the Polignacs, and others, on the French coast, in the years 1803 and 1804, captain Wright was soon after made prisoner of war; and, on the supposition that his evidence would be useful in procuring the conviction of Pichegru and Cadoudal, he was carried to Paris and lodged in the Temple. He, however, declared himself ignorant of the plans of the conspirators, asserting that he merely obeyed orders in landing them in France. Reports were spread at the time, and of course believed, that he was put to the torture, by order of Napoleon, to force him to confess, and that Réal and Dubois were the instruments of the emperor in this act. In 1805, his exchange was consented to; but, in November, the *Moniteur* announced that he had been found dead in prison, having cut his own throat from impatience and despair. The enemies of Napoleon, and particularly the British, on the other hand, loudly charged the death of the prisoner to the emperor, who, as it was pretended, had been induced to commit the foul act to prevent a public exposure of the treatment to which captain Wright had been subjected in the Temple. Others have imputed the murder to Savary, Fouché, and Réal, to whom the same motive—a desire of concealing their conduct towards the prisoner—has been imputed. While at St Helena, doctor Warden mentioned the subject to Napoleon, and told him that it was pretty generally believed in England, that he had caused captain Wright to be put to death. "Why should I have committed such an act?" replied the emperor. "Of all men whom I have had in my power, he was the person whom I should have been most given to preserve; for, in the trial of the conspirators which was then going on, Wright was the most important witness, as he had brought the chief conspirator, Pichegru, into the country." Napoleon also declared that Wright perished by his own hand, some time before his death was announced in the *Moniteur;* and Fouché and Savary agreed in this statement. (See *Savary; Otranto, Duke of;* and *Pichegru.*) The trial, however, took place in March, April and May, 1804, and the death of Wright in October, 1805. Savary, in his Memoirs (2 vols., 8vo., London, 1828), has the following remarks on this subject:—"That unfortunate man remained in the Temple till 1805, when he died. So many stories have been told concerning his death, that I, too, was curious to learn the cause of it, when, as minister of police, the sources of information were open to me; and I ascertained that Wright cut his throat in despair, after reading the account of the capitulation of the Austrian general Mack, at Ulm; that is, while the emperor was engaged in the campaign of Austerlitz. Can one, in fact, without alike insulting common sense and glory, admit that this sovereign had attached so much importance to the destruction of a miserable lieutenant of the English navy, as to send, from one of his most glorious fields of battle, the order for his death? It has been added, that it was I who received from him this commission. Now, I never quitted him, for a single day, during the whole campaign, from his departure from Paris till his return. The civil administration of France is in possession of all the papers of the ministry of the police, which must furnish all the information that can be desired respecting that event."

WRINKLES; folds of the skin, occasioned by that organ being too large for the parts it encloses. When, therefore, the parts beneath the skin, in any part of the body, are diminished from any cause, and the skin itself does not shrink in the same proportion, wrinkles are formed. So, when the skin is too much relaxed, or when it is moved very often, the same result is produced. Hence sickness, age, and the indulgence of violent passions, produce wrinkles. Warm bathing, by relaxing the skin, has the same tendency.

WRIST (*carpus*). The part of the arm between the fore-arm and hand is admirably calculated to increase the action, and, consequently, the utility of the hand, by giving it various motions, without which, as any one may easily convince himself, it would be a much less efficient instrument of handling, seizing and conveying objects. It is composed of eight small bones in two rows, the motions of which on the fore-arm may be described as those of flexion, extension, abduction and circumduction. Beasts of prey, which use their fore-paws for seizing their food, are provided with similar instruments of motion in that part; but in those animals, like the horse, &c., in which the fore-feet are merely instruments of locomotion, there is no such machinery for free motion in various directions.

WRIT. A writ is a precept issued by some court or magistrate in the name of the government, the executive branch of the government, or that of the state, or people of the state, intending, in either case, the supreme authority or its representative, addressed to a marshal, sheriff, constable, or other subordinate executive officer, commanding him to do some particular thing. Writs are distinguished into *original* and *judicial*, the former being such as a party sues out without any direction of the court in the particular case; the latter, such as are issued in pursuance of a decree, judgment or order of a court. The different descriptions of writs are too numerous to be specified and described in this article. The term *writ* is, however, not confined to the proceedings in a suit; for there are writs of election, ordering certain officers to be chosen; writs in the nature of a commission, for instance, summoning one to be chief justice (2 Coke's *Ins.* 40), or to take the degree of serjeant at law; so there are writs of protection, issued, for instance, to secure a person from arrest while he is attending as a party in a suit. In England, writs usually issue in the name of the sovereign.

Writ of Error is a commission to judges of a superior court, by which they are authorized to examine the record upon which a judgment was given in an inferior court, and, on such examination, to affirm or reverse the same according to law.

WRITERS, OR CLERKS TO THE SIGNET; a numerous society of gentlemen of the law in Scotland, who are chiefly employed in civil trials before the court of session. The clerks to the signet were anciently clerks in the office of the secretary of state, by whom writs passing the royal signet were prepared. When the forms of the judicial procedure in this country were changed, in consequence of the introduction of clerical judges into the administration of justice, and the brieves of the old law, with jury trial, fell into disuse, which it appears gradually to have done for about a century before the institution of the college of justice, the royal signet was open to the writs or summonses ordering attendance on the court, or to the diligence necessary for giving effect to its decrees; and the new writs, which in this manner became requisite, were prepared by the writers to the signet; in consequence of which, their numbers must have considerably increased as the new system of writs extended. At the time of the establishment of the college of justice in 1535, the writers to the signet were in the exercise of the same duties in which they are engaged at the present day; and they are recognised by the act as a constituent part of that college. The duty of the clerks to the signet, or writers to the signet, as they are often called, is to prepare the warrants of all charters of lands flowing from the crown; all summonses for citing parties to appear in the court of session; all diligences of the law for affecting the person or estate of a debtor, or for compelling implement of the decrees of the supreme court. The writers to the signet have farther the privilege of acting as agents or attornies in conducting causes before the court of session. The society is now under the keeper of her Majesty's signet, who acts by a deputy keeper; and the affairs of the body are conducted by this deputy and certain commissioners named from the members, with power to them to make bye-laws for the admission of members and the regulation of their conduct.

By the laws at present in force, it is requisite that a young man, before applying to be taken on indentures by a writer to the signet, should have attended one of the universities two years. Evidence of this must be produced with his petition. The indenture continues for five years; the apprentice-fee is £130 sterling, £20 to the widows' fund, and £20 to the library. After the expiration of the indenture, one year must intervene before he can be taken on trial; and he must have attended three classes of law, independently of his previous attendance for two years. The candidate being admitted to his trials, is first examined on his knowledge of Scotch law by three private examinators; and, at the distance of three months, he is examined in the hall of the society, by the public examinators, in presence of the commissioners, on his knowledge in conveyancing. The dues of his admission are about £77, with some trifling perquisites to the officers and gown-keepers, besides stamps on the indenture and commission. The system of education, the time necessarily occupied in it, and the expence with which it is attended, are well calculated to secure respectable and well informed members.

WRITING; the art of expressing, by visible signs or characters described on some material, thoughts, feelings, or musical tones. With modern civilized nations, it signifies more especially the art of representing by certain characters the tones of which our speech consists; that is, of representing ideas by phonetic signs. Metaphorically, it is applied to style and composition, as the instrument of conveyance is often taken for the thing conveyed. Writing, if required by law for certain purposes, means now, in most countries, the expression of ideas by pen and ink, pencil writing being generally considered invalid. The art of writing, especially when reduced to simple phonetic alphabets like ours, has, perhaps, done more than any other invention for the improvement of the human race. It may, like other great blessings, have been attended with some evils; but it has been the most efficient means of raising mankind from barbarism to civilization. Without its aid the experience of each generation would have been almost entirely lost to succeeding ages, and only a faint glimmer of truth could have been discerned through the mists of tradition. For this reason, and because, in the earliest ages, almost all knowledge is concentrated in the caste of priests, it is easily explainable that the art of writing is considered, in the earliest periods of history, as something sacred, and believed to have been brought by the gods to men, or to have proceeded from immediate inspiration, as in the case of the Greek Cadmus. If the art of tilling the ground was deemed so great a blessing that the gods were represented as having taught it to men, how much more must mankind have been inclined to refer the art of writing—the great source of civilization—to the same origin, after the slow process of its developement had been forgotten! We have spoken of the probable mode of its developement in the article *Hieroglyphics*, and will only add here a few remarks, which were promised in that article.

The picture-writing of Mexico, discovered when that country was conquered by the Spaniards, is one of the most interesting monuments of the progress of civilization, and the developement of the human mind. Spineto, in his Lectures on the Elements of Hieroglyphics and Egyptian Antiquities, describes a specimen of Mexican hieroglyphics, which he saw in the library of the Escurial, and which was imported to Europe by a Mexican, who translated it into Spanish. The title of the book is, History of the Empire of Mexico, with Notes and Explanations. An account of it, taken from Lecture vii, is here subjoined:—"The translation is divided into three parts. The first is a history of the Mexican empire, containing the biography and conquests of not less than eleven kings: the second is a regular roll of the several taxes which each conquered province or town paid to the royal treasury; and the third, a digest of their civil law, the largest branch of which was of their common law, or *jus patrium*. In each of these pictures every king is represented by different characteristics: the length of his reign is marked by squares round the margin, which, when the reign happens to be extremely long, fill the four sides of the picture. In each square there is a small circle to signify the year—a mark which they repeat according to its number till they reach thirteen, after which they begin over again to count one; and under these small circles there is a kind of hieroglyphic figure, which is repeated in every fourth square. In all the pictures that exhibit the reign of each king, there is a figure which shows the nature of his government, and, therefore, varies according to the circumstances and the events that took place during his reign. In this picture it is a shield or a target, crossed by four lances, which means that this king subdued, by force of arms, four towns or people. They are expressed by four rough drawings of a house, to which a symbol, or hieroglyphic figure, denoting the name of each, has been attached. In the first, we have a tree; in the second, another tree of a different sort; in the third, a kind of basket; in the fourth, a sort of box, with two handles. These exhibitions I am unable to explain; but they, no doubt, were perfectly intelligible to the people, and perhaps might have had a reference to the natural productions of the subdued provinces. To mark the beginning of the reign, and the different epochs which a king performed any of the actions mentioned in the picture, or even his death, they painted the figure of the king, with his characteristic emblem, which denotes his name, opposite to the year in which the event had taken place. Thus, in this picture, the king's name is said to be Acamapichtli, and his figure is repeated twice; opposite, the first square, which marks the beginning of his reign, and opposite, the eighth square, which shows that in the eighth year of his reign he put to death the chiefs of the four towns he had conquered. This circumstance is expressed by four heads placed before him, distinguished by the same hieroglyphical characters which mark the towns or provinces over which they reigned. Across the figure of the king there is a kind of sash, with a knot on his shoulder, which, by its length and breadth, means the number of wives and children he had. In the present instance, it seems not to be deficient in either of these dimensions. I am told that there is another mark to express the quality and number of children, whether male or female; but, to confess my ignorance, I could never discover it, although I have observed all the pictures of the several reigns recorded in this curious piece of history, with all possible attention. To the picture of each reign a second picture was invariably attached, which indicates the other actions of the sovereign as a politician, and the other events that had distinguished his government. The whole account given by Purchas is curious and highly amusing. In recording the tribute or taxes which each town had to pay, as it was paid in kind, it seems that the Mexicans had adopted the plan of drawing the figure of the object. Thus to represent a basket of cacao-nuts, or of any other sort of corn, they drew the figure of a basket containing the ears of corn, or the seeds extracted from the fruit of that tree or plant. To represent suits of military clothing, armour, shields, they exhibited their respective figures. The different sorts of mantles, whether of feathers or other materials, were signified by their respective figures, differently coloured. The number of each article was expressed either by circles, each of which signified ten, or by a kind of pine-apple, which meant five, painted at the top of the basket, or by the side of each individual article; and if their quantity was so great as to amount to a burthen, or a load, this was expressed by another mark, which had the same signification. The like must be said of their paper, their cups, pots of honey, cochineal, wood, planks, beams, timber, loaves of salt, hatchets, lumps of copal, refined and unrefined, silk, wool, stones, canes to make darts, eagles, skins of animals; in short, of every thing which each town had to pay for the maintenance of the state. It would be impossible for me to give a minute account of their civil and religious institutions, which form the third, and by far the largest department, in this most extraordinary picture. Every trade, every office, every employment, is differently delineated. The rites attending the several ceremonies of burial, marriage, and baptism (for they certainly had some sort of baptism), are minutely set down. But, above all, it seems that the education of children, from their infancy to manhood, had attracted the greatest attention of their legislature. The quantity of food, the quality of labour, the different pursuits attached to each distinct age, the various punishments decreed for the different faults, are stated with a precision and clearness which is quite astonishing. The age of the child can always be made out from the number of circles placed above its head; the figure of the mother, and indeed of any woman, by her kneeling posture, and sitting on her legs; while the figure of the father, the priest, the teacher, and, indeed, of all men, besides the different attributes which designate the employment, is always represented either standing or sitting on a low stool, with his knees to his breast." Spineto here introduces, as a specimen, a table, which represents all the following ceremonies of a marriage. "This [the marriage] was generally brought about by an old woman, whom they call *Amantesa* (that is, a marriage broker), who was to carry the bride on her back to the house of the bridegroom, at the beginning of the night, accompanied by four women bearing torches of pine-tree. When arrived at the house, the bride and the bridegroom were seated near to the fire on a mat, the woman, as usual, sitting on her legs, the man on a stool. There they were tied together by the corner of their garments; after which they offered to their gods a perfume of copal, two old women and two old men being present as witnesses. This ceremony over, they were allowed to dine upon two different sorts of meat, and some pulse. Thus, not only the dishes to be used were marked, but also the cup out of which they were to drink. The witnesses were allowed to dine after the newly-married couple, which circumstance is expressed by their being seated at the four corners of the mat, which served for a dining-table. The sign which is added to the mouth of these four witnesses signifies that, before they retired, they had the right to give, and, in fact, they gave, to the married folks good counsel how to behave themselves, that they might live in peace and happiness. The position of one of the women, holding up her right hand, means that the portly matron is already making use of the privilege allowed to give a little exercise to her tongue; while the folded arms of the remaining witnesses prove that they are waiting for their turn. In the punishment of their children, the Mexicans seem to have been ingeniously cruel. Most of the chastisements I find marked down, consist in unmerciful castigations; in driving into the hands, and arms, and legs, and into the body of the culprit, thorns and prickles. Sometimes they singed his head with fire; at other times they tied him down to a board, and threw him into a bog; and occasionally they held the head and nose of the unfortunate child upon the smoke of a particular wood, which they called *axi*. The crimes for which they inflicted punishments so severe and so cruel are the same with those which are condemned by the laws of the most civilized nations of Europe, and cannot but inspire us with a very favourable, nay, exalted opinion of the moral notions of the Mexicans. They seem even to have gone beyond us for the sake of preserving proper habits of industry and morality among the people; for they not only punished drunkenness with death, but also idleness; for if drunkenness, said they, renders a man capable of committing a crime, idleness exposes him to drinking and to bad company. This law, however, lost its power with men and women as soon as they reached the age of seventy: they were then allowed to pass their lives in idleness, and to get drunk, both in public and in private. The reason assigned for this extraordinary regulation is, that, as they could no longer work, and had but a short time to live, the law indulged them with the enjoyment of what seems to have been considered by the Mexicans, as one of the greatest pleasures of life. Such is the short account that I can give of this most singular mode of expressing ideas by pictures, which is, I think, an exemplification of the first mode of writing by hieroglyphics. It is, besides, one of the most interesting monuments by which we can arrive at the knowledge of the history of Mexico; for it is evident, that from the wisdom of their regulations; from the quantity of taxes, which, as is recorded in these pictures, were levied upon the different towns and nations; from the minuteness of the details; and from the pictures themselves, which show some knowledge of perspective and drawing,—the Mexicans had made no inconsiderable progress in knowledge, in civilization, and in the cultivation of the arts." To this, professor Stuart adds the following observations in his son's (Mr Isaac Stuart) translation of Greppo's Essay on the Hieroglyphic System, &c. (1830). "The whole of the above symbols much more resemble the anaglyphs of the Egyptians than they do the common hieroglyphics, figurative or tropical. That they are totally diverse from phonetic hieroglyphics, need not be said. The combination of so many symbols, some of which have no resemblance, but a merely conventional or imaginary one, is a trait altogether of a nature similar to the predominating quality of the anaglyphs. There is some special interest attached to the subject now before us. In connection with what has been before said, it shows that three of the most distinguished nations of three different continents, namely, the Chinese in Asia, the Egyptians in Africa, and the Mexicans in America, have all hit on the like expedients, to transmit their ideas to posterity. In all these facts, too, we may see the infancy of alphabetic writing, the germ from which this tree sprung, whose leaves are for the healing of the nations."

We have pointed out in the article *Hieroglyphics*, the mode in which the important step was made from picture-writing to a phonetic alphabet. We would refer the reader, for further information upon this interesting subject, to the eighth and ninth lectures of the above mentioned work of the marquis Spineto; to which we will add here the remark of professor Stuart, in the translation of Greppo by his son, already cited. He says, "There are some striking resemblances between the Chinese signs employed in writing and the Egyptian hieroglyphics; so striking that some have been led to suppose that one of these nations must be a colony of the other. It is now well known that the original written characters of the Chinese were imitative or figurative, and that they were few in number. These have, in process of time, been modified and changed, both as to form and use, so that scarcely a vestige now remains of their original appearance, and, in some cases, of original usage. All the Chinese writing was originally ideographic; that is, it resembled the figurative and tropical hieroglyphic method of the Egyptians. But now, as stated by that excellent Chinese scholar, Abel Remusat, in his Chinese Grammar, p. 4, at least one-half of the Chinese characters are merely phonetic, or alphabetic, in the sense of syllabic. These the Chinese call *hing-ching*, that is, representing sound. In the next place, the Chinese have an order of characters which they name *hoeï-i* and *kia-tsieï*, which are designed to express abstract and intellectual ideas. These resemble, of course (not in form, but as to use), the tropical hieroglyphics of the Egyptians. But, on the other hand, there are some striking differences between the hieroglyphic system of writing and that of the Chinese. The Chinese characters are divided into primitive, or simple, and derived, or composite. Of the first, called *siang-hing*, which make the elements of all their writing, there are only about 200 (Remusat's *Grammar*, p. 1, note 2), while the Egyptian hieroglyphics amount to more than 800 (*Précis*, p. 267). The derived or composite characters of the Chinese are exceedingly numerous; and in these are combined two or more simple characters. The combination oftentimes is very complex, and not a little difficult for a learner to decipher. These are called *hoeï-i*. On the contrary, in Egyptian, the combination of proper hieroglyphics is very rare; indeed, it scarcely ever takes place, and when it does, it is in such a way that the elements of the combination are preserved entirely separate; as, for example, in the anaglyphs above described. These striking points of difference serve to show that although the figurative hieroglyphics of the Egyptians, and the *siang-hing*, or original simple characters of the Chinese, were alike (for such must be the case, inasmuch as both were pictures, or imitations of sensible objects), yet, in the course which the two nations respectively chose, in order to represent abstract and intellectual ideas, there was a great diversity; hence the tropical characters of the Chinese, compounded of the simple ones, and diversified to an almost endless extent, are very different from the tropical characters of the Egyptians, which continued to be simple in their structure, and, in general, incapable of combination. That light may yet be cast on the invention of proper alphabetic signs, from a diligent and extensive collation of Egyptian and Chinese characters, and a better understanding of the true nature and history of each, every lover of literature will continue to wish and to hope."

To illustrate another very important step in writing, that of expressing grammatical forms by hieroglyphics, alluded to in the article *Hieroglyphics*, we extract the following passage from the fifth Lecture in Spineto's work: "The marks of the genders are, a square, either plain or striated, for the masculine, and half a circle for the feminine. The plural is almost invariably expressed by a simple repetition of the [hieroglyphical] units: to these units sometimes is added a quail: all of these stand for the syllable *noue*, or *oue*, which is the termination added to the plural: for instance, the word *soten* signifies *king*; and, by the addition of *noue*, we have *so-tenoue* (kings); *noyte* (god), *noytenoue* (gods); and the like. In regard to the genders, it seems the Egyptians also expressed them by employing the pronouns *of him*, *of her*; and these pronouns were represented by the figure of an undulating line over a serpent, or over a broken bar. In the first instance, the group represented the pronoun *his*, or *of him*, which, in Coptic, was *nef*, or *nef*; in the second instance, the group stood for the pronoun *hers*, or *of her*, which, in Coptic, was called *nes*." These terminations, or an abbreviation of them, if added to hieroglyphic expressions, would make them either of the masculine or feminine gender: "For example, the *chenalopex*, that is, the *goose*, or the *egg*, are the phonetic hieroglyphics expressing the word *child*; for both of them represent the letter *s*, which is an abbreviation of the word *se*, or *tse* (son, child): therefore if to the bird or to the egg we add the figure of the serpent, or the broken line, we shall have, in the first instance, the group signifying *son of him*, or *his son*, and, in the second, *son of her*, or *her son*. The genitive case is expressed mostly by an undulating line added to a group. This hieroglyphic stands for the letter *n*, and, on those occasions, is taken as an abbreviation of the syllable *nen*, which is the invariable termination of the genitive case in the Coptic language. The Egyptians distinguished the third person singular of the present tense in the same way as we do in the English language, by adding the letter *s* to the word, such as *he does*, *he writes*. The figure of the serpent, which stands for the letter *s*, is a mark of the third person singular of the present tense." Champollion has found a number of other hieroglyphics, which exhibit the inflections of verbs; but they are not yet all accurately determined. "The passive participle was represented by two hieroglyphics, the horn and the half circle. The pronoun *this* was exhibited by a vase and a perpendicular line. The pronoun *who*, or *which* was represented by a vase and half a circle. Such are some of the principal and most important grammatical forms or phrases." It may be made a question whether phonetic alphabets are all derived from a common source, or whether different nations, in the gradual progress of improvement, were led to this great invention without mutual communication. If the latter supposition be correct, the similarity of these alphabets in the oldest languages would be owing to the similarity in the minds of men, and in the processes of their developement; but in either case, after phonetic characters were invented, they would naturally assume a great variety of forms, being merely arbitrary signs. Such we find to be the fact. A considerable number of ancient alphabets still exist, such as the demotic, hieratic and hieroglyphic characters of the Egyptians, the old Phœnician, Punic, Etruscan, Greek, Runic, Cuffic, arrowhead characters, and a number of others. The last are also cal-by some the *wedge characters*, because the lines of which they consist are so put together as to have a wedge-like form. This species of writing is found upon some ancient monuments of Persia and Babylonia. The arrow-head characters may be divided into two principal classes, the Persian and Babylonian, or the Median and Chaldean, of which the former has again three, the latter two subdivisions. The Persian arrow-head characters are found in the ruins of Pasargadæ and Persepolis, in the valley of Margab near Fasa in Persia, in the ruins of Susa and Babylon; and, in most of these cases, inscriptions in all three characters stand word for word one under the other. The Babylonian arrow-head character, however, never appears, except alone, on the various kinds of tiles and other bricks and stones in the ancient Babylon; also on gems and cylindrical amulets. All these sorts of inscriptions are read horizontally from left to right, are phonetic, and comprise some characters for parts of words and monograms. As yet the various attempts to decipher these inscriptions have proved unsuccessful. —See *The Assyrian Wedge-Character explained*, &c., edited by Dorow (Wisbaden, 1820, in German).

Not only the character of the various alphabets differ, but also the order in which the characters are connected, or, which is the same thing, the way in which the writing is to be read. The most ancient ways of writing include, 1. Cionædon, or column writing, in which the letters and words stand one under the other, as is the case with the Chinese writing, and with the Egyptian hieroglyphics; 2. the Boustrophedon, or furrow writing, which proceeds, like the furrows of the plough, alternately from right to left, and from left to right; 3. Sphærædon, or circular writing.

It is highly probable that the Greeks received the art of writing from Egypt, either directly or through the Phœnicians. The Greeks say that Cadmus brought them the first alphabet, consisting of sixteen letters, according to Pliny the following:—Α. Β, Γ, Δ. Ε, Ι, Λ. Μ, Ν, Ο. Π, Ρ, Σ, Τ, Υ. To these Palamedes added Θ, Ξ, Φ, Χ; and Simonides again added Ζ. Η, Ψ, Ω. It ought to be observed that the Samaritan letters did not differ from the Greek. Originally the Romans wrote only with uncial characters. In the ancient manuscripts found at Herculaneum, and especially in the Greek manuscripts, all the words are written in uncial characters, and are neither separated by points nor spaces. There is nothing to indicate the division of the words. No sign is met with, which might assist in the pronunciation. The signs of punctuation did not begin to be used until the knowledge of the Greek language was lost. See Winckelmann's *Letters on Herculaneum*.

With the conquests of Rome, the art of writing, and particularly the Roman alphabet, were more and more widely spread; but great difficulties were found to attend the attempts to write down the languages of particular countries with characters adapted to another language; i. e. to other sounds. Such attempts were not often made by the Romans; but when the missionaries spread themselves through the countries of Europe, and found it necessary to give instruction in writing, as well as to prepare translations of the Gospels into the various idioms, we meet every where with complaints of the difficulty, and sometimes the impossibility, of rendering the native sounds by the already existing alphabet. The reason is clear. In some instances, the sounds may have been so rude, and so little different from the cries of animals (as is sometimes the case with the language of savages), that they could not be expressed by signs for articulate sounds; sometimes the tones were totally different from those for which the alphabet had been made. This circumstance has produced a great effect on the orthography of these languages, and, in our opinion, in various cases on the languages themselves. Certain differences between sounds have been lost in consequence of the want of characters to designate them, as appears from a variety of facts. The same complaints, which were made in the first centuries of Christianity, respecting the difficulty of ascertaining the true sound of the native words in some instances, and of writing them with Latin characters, are now made by the missionaries in the South sea islands, &c. And if it was difficult to adapt the Latin alphabet to foreign idioms, how much more difficult must it be to adapt the English orthography—certainly the most preposterous existing—to different classes of languages! It was therefore a very useful undertaking of Mr John Pickering to prepare an alphabet fitted to convey all the sounds which commonly occur in the various languages. This alphabet has been adopted by the war department of the United States of America, for the writing of the Indian languages, and by the missionaries of the South sea islands. It is given at the end of this article.

Respecting the alphabets used at various times in Great Britain, Mr Astle observes that, after the most diligent inquiry it doth not appear that the Britons had the use of letters before their intercourse with the Romans: and though, from the coming of Julius Cæsar till the time when the Romans left the island, in the year 427, the Roman letters were familiar to the eyes of the inhabitants, he is of opinion, that writing was very little practised by the Britons till after the coming of St Augustine, about the year 596. The writing which prevailed in England from this time to the middle of the eleventh century, is generally termed *Saxon*, and may be divided into five kinds, viz. the Roman Saxon, which is very similar to the Roman, and prevailed in England from the coming of St Augustine till the eighth century; the set Saxon, which took place towards the middle of the eighth century, continued till about the middle of the ninth, and was not entirely disused till the beginning of the tenth century; the running-hand Saxon, which came into use towards the latter end of the ninth century, when learning was diffused in England under the auspices of king Alfred, in whose reign many books were written in that island in a more expeditious manner than formerly; the mixed Saxon, occurring in the ninth, tenth, and in the beginning of the eleventh centuries, in many manuscripts which were written in England in characters partly Roman, partly Lombardic, and partly Saxon, and the elegant Saxon, which took place in England early in the tenth century, lasted to the Norman conquest, but was not entirely disused till the middle of the twelfth, and is more beautiful than the writing in France, Italy, and Germany during the same period. The writing introduced into England by William I. is usually called *Norman*, and is composed of letters nearly Lombardic, which were generally used in grants, charters, public instruments and law proceedings, with very little variation, from the Norman conquest till the reign of king Edward III. About the reign of king Richard II., variations took place in writing records and law proceedings. The characters from the reign of king Richard II. to that of king Henry VIII., were composed partly of characters called *set chancery* and *common chancery*, and some of the letters called *court-hand*; which three different species of writing were derived partly from the Norman, and partly from the modern Gothic. The modern Gothic began to take place in England in the twelfth century; the old English about the middle of the fourteenth century; and set chancery and common chancery in the decline of the same century, and are still used in the enrolments of letters patent, charters, &c., and in exemplifications of recoveries; the court-hand was contrived by the English lawyers, and took its rise about the middle of the sixteenth century, and continued till the beginning of the reign of George II. when it was abolished by law. The court-hand characters were nothing more than the Norman characters very much corrupted and deformed. In the sixteenth century, the English lawyers engrossed their conveyances and legal instruments in characters called *secretary*, which are still in use. The French call their writings by the names of the different races of their kings, in whose times they were written; these were, the Merovingian, the Carlovingian, the Capetian, the Valesian, and the Bourbon.

The manuscripts written in the northern parts of Scotland and in Ireland are in characters similar to the Saxon. It seems probable that the interior parts of Europe were immediately peopled from the northern parts of Asia, and the maritime parts from Phœnicia, and the southern and western parts of that quarter of the globe. If this be the case, it is not surprising that some Eastern customs prevailed in Great Britain and Ireland, and that many Celtic words are still preserved both in the Irish and in the Welsh languages. The Norman characters, it is observed, were generally used in England from the coming of William I.; and the Saxon characters were entirely disused in the very beginning of the twelfth century; but the Irish and Scots preserved the ancient forms of their characters till the end of the sixteenth century. The Gaelic or Erse language, used in the Highlands of Scotland, and the Hiberno-Gaelic, are nearly the same; and their letters are similar to each other; as Mr Astle has shown by various specimens. The curious will find much information on the subject of this article in Astle's Origin and Progress of Writing (4to., 1784).

The German alphabet was formed by Kero and Ottfried, in the time of Charlemagne. German was first written with Latin letters. In fact, most writings of that time, as forms of laws, treaties, &c., were even drawn up in the Latin language. The thirteenth century is generally considered as the time when German characters became common, under the emperor Frederic II. Others assume a later period. Germany has, as Mr Breitkoph observes, but two national alphabets, the (so called) *fractur* and the *current*. Fractur characters were formed out of the (so called) new-Gothic and monastic characters, which sprung up in the eleventh century. It was not till the fifteenth century, that the current or cursive characters were used in printing. Before that time, straight characters only had been used in printing: but the elder Aldus Manutius made types for the cursive character. Albert Dürer at last settled the proportions for the German characters. In diplomatics the knowledge of the letters used at different periods is very important. They have been classified, &c.—See *La Nouvelle Diplomatique*; also Weber's *Essay towards a History of the Art of Writing* (in German: Göttingen, 1807). We have said above, that the alphabets of Europe, and, in fact, most, perhaps all alphabets now existing, are phonetic (see the article *China*, division *Chinese Language, Writing*, &c.), and it is interesting to know what articulate sounds are used to express the thoughts and feelings of man. We have touched upon this subject in the article *Voice*, and add here a synoptic table of the English elementary sounds as they really exist in the English language, however they may be written. This table is taken from the article *Sound*, written by Sir John Herschel for the *Encyclopædia Metropolitana*. The syllables which contain the sounds referred to, are printed in italics, where words of more than one syllable are introduced.

1. { – Rook; Julius; Rude; Poor; Womb; Wound, Ouvrir (Fr.)
   ⌣ Good; Cushion; Cuckoo; Rund (Germ.); [illegible]
2. Spurt; *Assert*; Dirt; *Virtue*; Dove; Double, [illegible]
3. Hole; Toad.
4. { – All; Caught; *Organ*; Sought; Broth; Broad.
   ⌣ Hot; *Comical*; *Kommen* (Germ.).
5. Hard; *Braten* (Germ.); *Charlatan* (Fr.).
6. Laugh; Task.
7. Lamb; Fan; That.
8. Hang; Bang; Twang.
9. Hare; Hair; Heir; Were; Pear; Hier (Fr.); [illegible]ren (Germ.).
10. Lame; Tame; Crane; Faint; *Layman*, Même (Fr.); *Städchen* (Germ.).
11. *Lemon*; Dead; Said; *Any*; *Every*; Friend; [illegible] (Germ.); *Eloigner* (Fr.).
12. *Liver*; Diminish; Persevere; Believe.
13. Peep; *Leave*; Believe; Sehen (Germ.), [illegible] (Fr.).
14. s; sibilus; cipher; the last vowel and the first consonant.

True Diphthongs.

1. Life; The Sounds No. 5 and No. 13, slurred as rapidly as possible, produce our English i, which is a [illegible] diphthong.
2. Brow; Plough; *Laufen* (Germ.). The vowel sound No. 5 quickly followed by No. 1.
3. Oil; *Kasen* (Germ.); No. 4 succeeded by No. 13.
4. *Rebuke*; Yew; You; No. 13 succeeded by No. 1.
5. Yoke; No. 13 succeeded by No. 3.
6. *Young*; *Yearn*; *Hear*; *Here*; No. 13 succeeded by No. 2, more or less rapidly.

The consonants present equal confusion. They may be generally arranged in three classes: sharp sounds, flat ones, and indifferent or neutral, the former two having a constant relationship or parallelism to each other, thus:

Sharp Consonants. S. *sell*, *cell*; [illegible] (as we will here denote it) *shame*, *sure*, *schirm* (Germ.); [illegible] thing; F. [illegible] *enough*, *phantom*; K. *king*, *coin*, *queer*; [illegible]

Flat Consonants. Z. *zenith*, [illegible]; [illegible] pleasure, [illegible] (French); [illegible] the *th* in the words *the*, *that*, *them*; V. [illegible] G. good; D. *duke*; B. *babe*.

Neutral Consonants. L. *lily*; M. *mamma*, N. [illegible] ng. bang; to which we may add the nasal N in [illegible] *Dnieper*, which, however, is not properly an English sound; R. *rattle*; H. *hard*.

Compound Consonants. C, or Tsh, *church*, [illegible] (Ital.) and its corresponding flat sound J or Dzh, *just*, *gender* [illegible] *extreme*, Xerxes; [illegible] *exasperate*, *exact*, Xerxes; &c. &c.

We have here a scale of thirteen simple vowels and twenty-one simple consonants,—thirty-three [illegible]—which are the fewest letters with which it is possible to write English. But, on the other hand, with the addition of two or three more vowels, and as many consonants, making about forty characters in all, every known language might probably be effectually reduced to writing, so as to preserve [illegible] exact correspondence between the writing and pronunciation. In addition to this table, the [illegible] which Mr Pickering, of Boston, in America, [illegible] to his proposed alphabet, which, as we have stated, is now adopted in some cases, is of great [illegible] as showing how the vowel sounds run into one another—a subject which we have had occasion to touch upon in the various articles relating to the vowels in this work. It is to be found, together with his alphabet, in the fourth volume of the Memoirs of the American Academy (Cambridge, 1818), and is given below.* The alphabet itself is as follows:

Table of the Alphabet.

A	as in the English words *far*, *father*, &c. (But see the note on the vowels.
B	as in English, French, &c.
D	(*the same*).
E	as in the English word *there*; and also short *e*, as in *met*, &c.
F	as in English, &c.
G	English *g* hard, as in *game*, *gone*, &c.
H	an inspiration as in English, &c.
I	as in *marine*, *machine* (or English *ee*); and also short *i* in *him*.
K	as in English.
L	(*the same*).
M	(*the same*).
N	(*the same*).
O	English long *o*, as in *robe*; and also the *o* in *some*, *among*, *done*, &c., which is equivalent to the English short *u* in *rub*, *tun*, &c.
P	as in English, &c.
R	(*the same*).
S	as in English at the beginning of a word.
T	as in English, &c.
U	English *oo*, both long and short; French *ou*.
V	English *v*, German *w*, Russian *b*, modern Greek *β*.
W	as in English: French *ou*.
Y	as in the English words *yet*, *you*, &c.
Z	as in the English, &c.

Nasals.

A̧	as in *ang* (sounding the *a* itself as in *father*).
Ȩ	*long*, as in *eyng* (pronouncing the *ey*, as in *they*); and *short*, as in the word *ginseng*; Portuguese *im* final.
I̧	*long*, as in *eeng*; and *short*, as in *ing*; Portuguese *im* final.
O̧	*long*, as in *owng* (sounding the *ow* as in *own*); French *on*; Portuguese *om* final. This character will also be used for *o* short *nasalized*, which is very nearly the same with *ong* in *among*, as this latter is equivalent to *ung* in *lung*, &c. See Walker's *Dict.*, *Principles*, No. 165.
U̧	as in *oong*; Portuguese *um* final.

To these should be added a character for the nasal *awng* or *ong*, which corresponds to our *o* in *for*, *nor*, &c. And as I have proposed to denote this vocal sound when not *nasalized*, by *aw* so it would be most strictly conformable to my plan, to denote the same vocal sound, when it is *nasalized*, by *a̧w̧* or *aw̧*. But perhaps the letter *a* itself, with the cedilla (*a̧*), may be used without inconvenience for this broad nasal sound; and we may still, in the common vowels, reserve the simple *a* to denote the sound it has in the word *father*, and not the sound of *aw*. For it may be found, that the first nasal sound in this table is not common in the Indian languages; in which case it would be best to use the simple *a̧* for the broad nasal here mentioned.

Diphthongs.

AI	English *i* in *pine*.
AU	English *ow* in *how*, *now*, &c., and *ou* in *our*.
IU	English *u* in *pure*; French *iou*.
YU	to be used at the beginning, as *iu* may be in the middle of words.

Additional Consonants.

DJ, DSH, or DZH,	English *j* and *dg*, in *judge*; French *dg*.
DH..............	as in the English words *this*, *that*; the *δ* of the modern Greeks.

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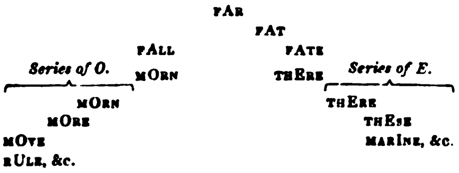
* In considering the several letters by which the vowel sounds are represented, both in our own and other languages, it will be perceived, that each of them may be taken as representing, not a single sound, but a series of sounds, which series will be more or less extensive according to the genius of different languages; and it will be further observed, that each series gradually runs into the adjoining series (if we may so speak), by such slight and delicate modifications, that it is a matter of no small difficulty, in many cases, to decide in what part of any one series we should drop the vowel character with which we began, and take another to continue the sounds of the next series: in other words, it is not easy to determine at what point one series ends and another begins. For example: if we take the letter *a*, we may assume the sound which it has in the word *father*, as the middle point of a series, the whole of which (beginning with the broad *a* in *fall*, and ending with the narrow or slender *a* in *fate*) we denote in English by this one character, thus:—FALL—FAR—FAT—FATE; and these are all the sounds in this series, which philologists designate in our own language by this one letter. But if we extend our view to other languages, we shall find various intermediate sounds between the two extremes of this same series; for example, between the sounds of our *a* in *fall* and in *far*, we find in the French language the â in *pâle*, *mâle*, &c., which can only be described, on paper, as a sound between our two, and which is seldom attended to by foreigners in speaking French. Now, if we should minutely examine a number of languages, and should endeavour to arrange accurately, in one progression, all the vowel sounds belonging to this series, we should doubtless discover in those languages many other slight modifications intervening between the different members of our English series. As, however, we cannot accustom our ears familiarly to distinguish nor our organs of speech to utter with precision, all these slightly-differing sounds, so we need no distinctive characters to represent them to the eye; but it will be sufficient in practice to have characters for the principal sounds (as we may call them) in each series, just as, in the prismatic series of colours, we content ourselves with a few names to denote one principal shade of each colour, without fruitlessly attempting to devise terms of theoretical nicety, to describe the innumerable shades on either side of the principal one from which we set out. If we now recur for a moment to the series above denoted by *A*, we find on one side of it a series which we denote by the letter *O*, and, on the other side, a series which we denote by the letter *E*. In the former we begin with the sound of *o* in *morn*, which might be written with *au* or *aw* (or with *a* alone, if we had been accustomed to write this word with that letter, as we do the word *war*), and then we proceed to the sound which it has in *more*, till we arrive at that which it has in *move*, which point may be considered, practically speaking, as forming the end of one series and the beginning of another, which is represented by the letter *U*; and these two contiguous extremes are sometimes represented by *o* and sometimes by *u*; that is, our *oo*. If we now take the other side of the series, represented as above by *A*, and set out from the sound which that letter has in the word *fate*, we enter upon a series, of which the letter *E* may be called the representative, beginning with its sound in the word *met*, which is the short sound of *a* in *fate*; and this series, proceeding imperceptibly through various gradations, at length vanishes in the simple, unequivocal sound of *ee*, which foreign nations denote by the third vowel, *i*. The following table will perhaps make these remarks more intelligible:

Series of the Letter A.



Now, in writing the Indian languages, it will often be found extremely difficult to decide, in each series of the vowel sounds, to what extent, on each side of the principal or middle point (as I have called it), we shall use the same vowel character, or when we shall have recourse to the letter which is the representative of the next adjacent series. From these considerations in the case of the vowel *A*, though we have no difficulty in using it to denote the sound of *a* in *far*, yet, when we proceed in the series to the full, broad sound which it has in *fall*, we feel a repugnance (arising from old habits in our own language) to denoting that sound by the single vowel, and are rather inclined to express it by *au* or *aw*. If it should be thought that it might be denoted by *o* (as in *for*), it will be obvious that this would only be throwing the same difficulty into another series, and we should then have to decide again, how far the letter *o* shall be employed in that series, on each side of its principal sound of *o* in *more*. Now this broad sound (*aw*), though found in the European languages, is not commonly represented in them by the letter *A*; and, therefore, foreigners who should attempt to read any Indian language, in which the simple *a* was employed to denote the sound *aw*, would inevitably be misled, and pronounce the *a* in *father*. It has, therefore, seemed to me better, in an alphabet designed for general use, to employ *aw* to denote this broad sound, and to reserve the single letter *a* to denote its common foreign sound, as in *father*. I should use *aw*, and not *au*, because the latter has already the established power of a diphthong in the foreign languages, equivalent to our diphthong *ow* in *now*, *how*, &c., but *aw*, being a combination not in common use, would attract the attention of the foreign reader as a new character, and would not lead him into error. Mr Du Ponceau, after much reflection, prefers using *a* alone for the sound of *aw*, and then denoting the sound of *a* in *father* by the diphthong *æ*. His opinion much diminishes the confidence I have had in my own; but as my plan was founded upon the idea of taking the common European sounds of the vowels as the basis of the alphabet, I have thought it would be too great a departure from it, if I should give to the vowel *a* any other than such common sound.

DS, DZ; TS, TZ,..	English *ts* in the proper name *Betsy*; German and Italian *z*: German *c* before the vowels *e* and *i*; Polish *c* before all the vowels; Russian *Tsi*. These four compounds being nearly alike (as Mr Du Ponceau justly observes to me), the ear of the writer must direct him which to use, as the respective consonants predominate.
GH................	See *kh* below.
GZ, or GS,	English *x* in *example*, *exact*.
HW,	English *wh* in *what*, *when*.
KH, guttural,	like the Greek *χ*; Spanish *x*, *g*, and *j*; German *ch*; Dutch *gh*. I have given the preference to *kh* for the purpose of expressing this guttural sound; but *gh*, pronounced as the Irish do in their name *Drogheda*, &c., may be better in certain cases where this guttural partakes more of the flat sound, *g*, than of the sharp one *k*. It may be observed, that *gh* has been already used in some of the books printed for the use of the Indians.
KS	English *x* in *maxim*, *exercise*.
KSH,	——*xi* in *complexion*; *xu* in *luxury*. The formation of this combination would be obvious; but as the sound is actually often used in the Delaware language, I have thought it best to notice it.
KW,	English *qu*.
LY, or LI, ...	as in the English word *steelyard*; French *l mouillee*; Spanish *ll*; Portuguese *lh*; Italian *gl* before *i*.
NY, or NI, ...	as in the English proper name *Bunyan*, and the words *onion*, *opinion*, &c
TH,.	in the English word *thin*; Greek *θ*.
TS, TZ, }	See *ds* above
TSH,..............	English *ch* in *chair*; Spanish *ch* in *much*; Italian *c* before *e* and *i*; German *tsch*; Russian ч.
WT, ...	as in the Delaware language
ZH, ...	as *s* in *pleasure*; French and Portuguese *j*; Polish *z*, with a comma over it (*ź*).

WRITING MATERIALS. In the most ancient times it would seem that writing was used for great occasions only; and that a rock, a tablet of stone or a plate of metal was the receptacle. The reader will doubtless remember, the stone tables of Moses, and the wish of Job, that his words were graven with an iron pen and lead in the rock. The works of Homer and Hesiod are said to have been first written on plates of lead, and many ancient documents on copper, of considerable extent, are still met with in India. The use of the tablet-stone is still familiar, and the sculptured rocks of the north of Europe show the practice of consigning records to this imperishable material to have been frequent amongst our ancestors of the ninth and tenth centuries. Some persons are of opinion that the first writing was upon thin pieces of wood, which from their convenience is very probable. Such boards were used at an early period by the Greeks and Romans, and were frequently covered with wax, which was of course more readily written upon than the bare wood. But such writing would be more easily obliterated, and was therefore used chiefly for temporary purposes. In one of the comedies of Aristophanes, a debtor proposes to elude the payment of his debt by melting with a burning-glass the waxen tablet on which the transaction was recorded, while his creditor should be looking over the account. When wax was used any errors were easily erased by rubbing with the blunt end of the piece of metal which served for a pen. To make the characters more visible, it appears that some black substance was smeared over the surface of the white wax, which remained in the scratched marks. The convenience of this process caused the practice to be continued long after the introduction of other materials.

Leaves of trees were used in ancient times by the Egyptians, and probably by the Greeks. The Hindoos continued the use of this material until within these very few centuries, and even at the present time books of leaves are not uncommon in the south of India, and in the island of Ceylon. The leaves of some Asiatic trees are, from their size and smoothness, so admirably adapted for books, that the cheapness and beauty of European paper has not been able entirely to supersede their use. If we may judge from the name of leaf being still applied to paper books, we should imagine these leaves to have been formerly the principal material in use. The interior bark of trees is of very ancient use, and its Latin name (*liber*) seems to intimate that it was as ancient among the Romans as the art of writing itself; no other name being used for a book than that of the writing material. In one respect the bark was superior to the leaf; it could be rolled into a volume, which was the favourite form among the ancients, while the leaf would crack if subjected to such a process.

Linen cloth was occasionally used, but was never very common. The mummy cases found in Egypt have occasionally linen manuscripts folded in them, and the Chinese before the invention of paper wrote silk and cotton cloths. The Romans also wrote on linen, as is stated by Pliny and others. The use of this material necessarily introduced an alteration in the process of writing. All the other substances we have mentioned were rather engraved than written upon, and an iron point was used for the purpose. To write on linen it was necessary to paint upon it with some coloured liquid, which might get dry and leave a permanent mark. This gave rise to the invention of pen and ink; the ancient ink used was probably composed of soot or lamp black, mixed with some sort of size or gum-water. An ink of this description may be somewhat less flowing than our modern ink, and consequently less adapted for rapid writing: but it has the great advantage of being a solid body of unalterable colour, whereas our ink is liable to have its colour destroyed by several chemical processes. The advantage of a solid body appears in the manuscripts dug up at Herculaneum, which although burned to a perfect charcoal, and buried for nearly eighteen centuries, are still legible; the ink remaining as if it were embossed on the surface, and appearing blacker than the burned paper, which, from having been polished, reflects the light in a small degree.

The instrument answering to our pen was the reed, a sort of bulrush, which grew in many parts of the East. Such reeds, cut in the manner of a quill, are still used by all those nations who write the Arabic character; and are found, even by Europeans who have occasion to write much Persian or Arabic, to be more suitable to that character (a mode of writing from right to left) than our pens. The nations who have adopted the Chinese character use a camel's-hair pencil, which is held perpendicularly in the hand; and although it would seem to us to be but little adapted for quick writing, the Chinese write their complicated characters with these implements with a rapidity seldom equalled by European writers.

The quill appears to have been first in use about the year 600: the word penna, meaning a quill, is not found in any work older than that period, previous to which we usually find the word calamus, reed. This word still exists in the modern Italian word calamajo, which signifies inkstand. The quill has an advantage over the reed in being finer and more durable, the same quill often serving for weeks, and even months. Steel-pens have, within these few years, come to supersede, in many cases, the use of the quill. The skins of animals were another and very ancient material for writing upon. The obvious convenience of this substance must have caused its adoption as soon as any means were devised for preserving it from spoiling; and the large size of skins, added to their pliability, must have caused them to be preferred to leaves of trees. It is most probable that the rolls of books mentioned by Ezekiel, Isaiah, and other prophets, were rolls of skins; and the very ancient copies of the Bible preserved by the Jews of Cochin, in India, are said to be of leather. These skins would naturally be made as white as it was practicable, in order to receive and show the ink, and thus by degrees would parchment be invented. The invention of parchment is usually attributed to Eumenes, King of Pergamus, who reigned in the third century before the Christian Era. He was the founder of an extensive library, in which the new manufacture was largely introduced. The use of this article, aided by that of paper from papyrus, which was first brought from Egypt about the same time, had a most beneficial influence in diffusing literature. Its whiteness, strength, and size, gave it a preference over every other material; and to its durability we chiefly owe the remains of ancient science which have reached our times. Even at the present day, with all our improvements in paper-making, the use of parchment for documents of importance prevails over that of paper. Its English name is most probably a corruption of the ancient one, Pergamena, which was derived from that of the place where it was first manufactured or most used.

The Egyptian paper, from the papyrus-plant, was for a long time as much in use as parchment. The papyrus-plant is described under *Papyrus;* but the paper made from it was not what we understand by the term,—a mass of torn fragments of vegetable matter, evenly spread out, and joined together by size and their own adhesiveness; it was a species of inner bark, or thin pellicle, separated from the plant by a sharp tool, and pasted together in layers until it attained the desired size and thickness, when it was pressed and polished. This sort of paper continued to be used contemporaneously with parchment until about the twelfth century, when the introduction of modern paper caused it to be disused, and the art of making it was lost. It was very extensively employed by the Romans, and by the Greeks in Rome. All the rolls burned at Herculaneum, and preserved by the fire which appeared to destroy them, were written on papyrus. No other writing is known to exist of nearly that age, although we have some undoubted specimens of ancient Egyptian papyrus. We may observe, however, that many old manuscripts said to be on papyrus are in reality written on cotton-paper.

In the ninth or tenth century, the use of paper, properly so called, was introduced into Europe. This article had already been manufactured in China, from a remote period (A. D. 95), of the internal substance of the bamboo, sometimes of the mulberry-tree, and occasionally of cotton. About the middle of the seventh century the manufacture was brought to Samarcand, or perhaps this city was only the depôt of China paper, as it was of some other objects of Chinese skill brought into the west by the Arabs. It seems to be ascertained that a manufactory of cotton-paper was established at Mecca in the year 716, from whence it was brought by the Greeks to Constantinople. The invention of cotton-paper, as far as common use required, superseded that of all other writing materials. It was of good colour, made very thick, and glazed with a tooth or hard stone, until it became smooth and lustrous, when it resembled parchment, or vellum. The Greeks are supposed to have introduced it into Western Europe,—first, through Venice into Italy, and afterwards into Germany, where it was known by the name of Greek parchment. Its importation into Spain by the Arabs was most probably somewhat later. Documents of the eighth century on cotton-paper exist in Italy, and many in Germany, as early as the ninth and tenth; in France and Spain it appears to have come into general use about the beginning of the eleventh century; these dates are deduced from those of manuscripts now existing; but it must be remembered that such documents do not afford a certain proof of the period of the introduction of paper; it is not likely that the very first documents written have reached us; many have doubtless perished, and some may exist unknown to us; on the other hand, documents purporting to be of a certain date, may be mere copies made at a more recent period. The earliest date upon cotton-paper known in England is nearly of the middle of the eleventh century. Cotton-paper appears to have supplied all Europe until the end of the thirteenth century, when linen-paper, such as we now use, is ascertained to have been invented. This invention has been placed considerably earlier by some good authorities, but it would appear that they have confounded linen with cotton-paper. In truth the earlier specimens of linen-paper differ so little from that of cotton, that it requires a considerable acquaintance with the peculiar characters of the two kinds to distinguish them. It is most likely that before linen-paper came into use as a separate article, linen rags would be occasionally mingled with cotton by the manufacturer, and as such a mixture would tend to improve the fabric, the proportion of linen would be increased, until at length it would be used alone. The oldest documents ascertained by competent judges to be on paper made wholly of linen, date very early in the fourteenth century, and before the close of that century they are found in England, France, Spain, Italy, and Germany. But the manufacture spread slowly, although the paper itself was soon in use in all parts of Europe. The first manufactures appear to have been in Spain and Italy; into the former country the Arabs had long before introduced the making of cotton-paper, and that of linen would naturally be substituted there as early as in any place, particularly as cotton was rare, and flax an article of frequent cultivation. In the year 1366, we find an exclusive patent granted by the Republic of Venice to the town of Treviso, for the manufacture of linen-paper. England was so slow in adopting the art, that although paper was used here as early as the fourteenth century, the first paper-mill was not built until the end of the sixteenth, when it was introduced by a German at Dartford in Kent. See *Paper, History of.*

WROTHAM; a town of great antiquity, in the county of Kent, twenty-four miles south-east by east from London. It is supposed to have been originally a town of the ancient Britons, and subsequently a Roman station, from various relics discovered here. It is situated at the foot of the chalk-hills, and consists of two streets, through which passes the military way from Oldborough to Stane Street. Population in 1831, 2469.

WRY-NECK (*yunx torquilla*); a small European bird, related to and having some of the habits of the woodpeckers; but the tail is soft, and cannot serve in any way as a support; and it never strikes the bark of trees with its bill. It also differs widely in its appearance, the plumage being mottled somewhat in the same manner as that of the American whip-poor-will. The name is derived from a habit of twisting its neck in a singular manner. This bird arrives in the south of England a few days previous to the cuckoo. It is rare in Scotland, and the northern parts of England.

WULFILAS. See *Ulfilas*

WURMSER, DAGOBERT SIGISMOND, count von, Austrian general field-marshal, was born of a rich Alsatian family, in 1724, and, having early entered the Austrian service, was engaged through the whole of the seven years' war; at the close of which he held the rank of major. In the war of the Bavarian succession (see *Bavaria*), he commanded an army in Bohemia, and, in 1779 (January 18), gained some advantages over the Prussians at Habelschwerd. The peace of Teschen soon after put an end to hostilities. On the breaking out of the war against France, Wurmser commanded a division of the Austrian army, and passed the Rhine March 31, 1793. After gaining some unimportant advantages, he was compelled to recross the Rhine, towards the close of the year, and was recalled from his command. In August, 1795, he rejoined the army, and captured Manheim November 22. In the summer of the next year, he took the command of the army of Italy, and forced his way to Mantua, into which he threw himself September 30. Here he was finally obliged to surrender to the French troops, after a siege of nine months. After his return to Vienna, he was appointed to the command in Hungary, but died before he could leave Vienna, of the consequence of his privations and sufferings in Mantua, in the summer of 1797.

WURTEMBERG, OR WIRTEMBERG; a kingdom of the western part of Germany, bounded by Bavaria on the east, and Baden on the west, and bordering on lake Constance on the south. It is of an oblong form, extending from lon. 8° to 10° 30′ E., and from lat. 45° 36′ to 49° 45′ N. It forms part of the old circle of Suabia, and covers an area of 7240 square miles. It is divided into four provinces, the Neckar, the Schwarzwald, the Danube and the Jaxt, with a population, in 1829, of 1,562,033 souls, of whom 1,506,270 were Germans, 2400 Waldenses, and 9100 Jews. The religion of the great majority of the people is Protestant: there are, also, 478,444 Catholics. There is one university at Tübingen, with, in 1830, 837 students; and there is also a considerable number of lyceums, gymnasia and high schools, with 2187 common schools (*Volkschulen*). The chief town and royal residence is Stuttgart, with a population of 31,000: the other principal places are Ulm (12,049), Reutlingen (10,180), Heilbronn, Tübingen, Hall, Esslingen, Ludwigsburg, Rothenburg and Gmünd. The great natural features of this country are two ranges of mountains, one called the Black Forest, or Schwarzwald, extending along the western frontier, the other called the Suabian or Würtemberg Alp, an insulated range of rocky hills, destitute of wood, beginning at Rotweil, and traversing the kingdom in a north-east direction. On these lofty tracts, the climate is cold and bleak; but the rest of the country is agreeably diversified with hills of moderate elevation, and pleasant valleys, which enjoy a mild and pleasant climate. The principal rivers are the Danube and Neckar, also the Enz, Muhr, Kocker, Jaxt and Tauber. Würtemberg, with the exception of the two mountainous ranges, is one of the most fertile and best cultivated parts of Germany. It produces the various kinds of grain; wine, the best qualities known abroad under the name of the Neckar wine; fruits of various kinds. The minerals are iron, silver, copper, coal and porcelain. The Black Forest produces abundance of pine and fir, considerable quantities of which are exported. The revenue, in 1830, amounted to 27,887,145 guilders; the expenditure to 27,868,136 guilders, the public debt to 28,604,350. The standing army, in time of war, is composed of 16,824 men, the peace establishment, of 4906, the contingent to the forces of the German confederation, of 13,955. The king of Würtemberg has the sixth vote in the German diet, and four votes in the plenum. The government is a constitutional monarchy: the constitution was adopted September 25, 1819. The king shares the legislative power, and the right of imposing taxes, with the estates, which consist of two chambers or houses, and possesses the entire executive power. The crown is hereditary in the male line, but, in case of the failure of males, passes to the females. The upper chamber is composed of the princes of the blood, of the heads of the mediatized families, and of members called to sit by the king. The lower chamber, or chamber of deputies, is composed of thirteen deputies, chosen by the nobility, who have the right of judicial jurisdiction, six deputies of the clergy, deputies of seven towns, and deputies of the sixty-three bailiwics of the kingdom. The reigning king, William I., born 1781, ascended the throne in 1816. By his third wife he has one son, Frederic, the crown prince, or heir apparent, born 1823. His predecessor on the throne was Frederic, declared king of Würtemberg in 1805.

Würtemberg, History of. The origin of the kingdom of Würtemberg, more properly Wirtemberg,* is as follows. Lords of Würtemberg are first mentioned toward the end of the eleventh century: down to the middle of the thirteenth century this family seldom appears; but from that time, the Suabian History is full of their conquests and compacts. The counts of Würtemberg were not, like other counts of the empire, originally officers of the emperor. They were the proprietors of extensive domains, and, by way of honour, called *counts*. The emperors infeoffed them at a later period. Besides the revenue which they derived from their estates, they received a considerable income from convents, towns and villages, which they agreed to protect. This branch of revenue was charged with the expenses of the government. Separate from this was the income of the patrimonial estates of the family. Such a separation is seldom found elsewhere, especially at so early a period. Taxes were to be raised only when the revenue was insufficient. This state of things began with count Ulrich, who acquired distinction in the middle of the thirteenth century. Germany was then without a head. The kings and emperors of Germany, from the death of Frederic II. to Rodolph of Hapsburg, were mere shadows. Ulrich died in 1265. His successor, count Eberhard, doubled the possessions which he had received from his father. He had many feuds with the emperors Rodolph, Adolphus of Nassau, and Albert of Austria. The emperor Henry of Luxemburg put him under the ban of the empire, and he was attacked from all sides, so that he fled to the margrave of Baden. But Henry VII. died in Italy, and Eberhard recovered all that he had lost. His son Ulrich purchased new territories, among which was Tübingen. His son Eberhard *der Greiner*, a knight known all over Germany, purchased, during his reign, from 1344 to 1392, about twenty towns in whole or in part, and a number of villages, &c., and maintained what he had acquired in a constant struggle with the free imperial cities of Suabia. His successors continued to increase their possessions almost down to the elevation of the Würtemberg territories into a duchy, profiting by the spendthrift habits of their neighbours, and seizing the wealth of the convents and free cities when they found opportunity. But the chief cause of the gradual rise of this family was the circumstance that its territory remained undivided. The first division took place in 1442; but it lasted only to 1482, and, by the treaty of Münsingen, the same year, the indivisibility of the territory became a family law. The emperor Maximilian, in 1495, made it a duchy; and Würtemberg became now the name of a country. The dukes soon acquired importance as members of the empire. To Eberhard, the same duke who made the family law just mentioned, the people of Würtemberg owe the first steps towards a constitution founded upon compact. Eberhard had, in consequence of a family quarrel, convoked deputies of the citizens for the settlement of public affairs, in 1482. On this occasion, it was solemnly stipulated that every thing done in future by the rulers of Würtemberg for the advantage of the country, should be done with the co-operation of the prelates, counsellors and deputies. The country nobility was excluded at his own desire. *Lutheranism* was introduced under Christopher, and through him and his successors the "permanent delegations" (standing committees) and the separate treasury acquired completeness, and stability. Frederic, at the beginning of the seventeenth century, and Charles, in the middle of the eighteenth, attempted to overturn the constitution, but in vain. It was not till 1806, that the government became an absolute monarchy, after the constitution had lost much of its efficacy and estimation in the last years of the reign of Charles. The thirty years' war, so ruinous to all Germany, was particularly disastrous to Würtemberg. Between 1634 and 1641, the population sunk from about 330,000 men to 48,000. All who were able left the country: great numbers were destroyed in battle or by famine and pestilence: towns and villages lay deserted and in ruins. To the Swedes, under the government of the chancellor Oxenstiern, and to the Swedish ministers at Osnabrück, Würtemberg owes her restoration, which was effected by the peace of Westphalia. (q. v.) But the reign of Louis XIV. was also a time of great suffering for this country; Melac, and other monsters, burned and devastated it. During the reign of duke Louis, Würtemberg was under the government of a mistress, like France in the time of Louis XIV. From the war of the Spanish succession to the wars of the French revolution, the country was free from foreign enemies. Only once, in the second Silesian war, foreign troops marched through it; and duke Charles took part with Austria against Prussia in the third Silesian war, with the hope of being assisted by that power in suppressing the chamber of taxation. But his attempt at absolute power was defeated by the aulic council of the empire, under the guarantee of Prussia, Hanover and Denmark, and the government became still more limited. The duke at once changed the character of his administration, diminished the expense of his court, and, during the last half of his reign, did much good. He patronised arts and sciences, though in a somewhat military manner. The Charles academy (see *Schiller*, and *Dannecker*) was founded by him. The population rose to 600,000. The religion of the country had suffered by the circumstance that, from 1733 to 1797, the princes were Catholic. Under the reign of duke Charles Alexander, a Jew, named Süss, ruined the finances, of which he was minister. He was hanged by Charles's successor. Through a Prussian princess, the mother of Frederic Eugene, Protestantism became again the religion of the rulers. During the government of Frederic, the French republic took possession of the Würtemberg territories on the left bank of the Rhine, and repeatedly occupied the duchy. His son, subsequently king Frederic I., was indemnified by an additional territory, containing 12,000 inhabitants. He himself was made elector. In 1805, he took part with France in the war with Austria; in return for which he was made king, with sovereign power, and received an addition to his territory, which gave him 200,000 new subjects. As soon as the empire was dissolved, the new king became a member of the confederation of the Rhine (see the article), and, as such, took part in all the wars of France, except that with Spain. Subsequently to the last war between France and Austria (1809), the population of the kingdom was increased to 1,350,000. After the downfall of the French empire, the king secured all his acquisitions by joining the allies. Since 1815, Würtemberg, though a small kingdom, has formed one of the larger states of the Germanic confederacy. Frederic I. was a tyrant, and that to a degree which is rare at the present time; yet like many other tyrants, he was a man of talent, and judiciously promoted the good of his subjects, where it was in accordance with his own objects. He died in 1816, and was succeeded by his son William I. When Frederic I. assumed the royal title, in 1806, he declared himself absolute sovereign. The peace of Presburg made him such in fact. The people of Würtemberg, in the confusion of the new order of things, took the oath of unconditional obedience, instead of the former constitutional oath. Only two or three persons made some opposition. But when the king went, in 1814, to the congress of Vienna, some voices demanded the old constitution. At this congress, the king supported by Bavaria, opposed Prussia and Hanover, which expressed themselves in favour of the establishment of representative estates throughout Germany. But he soon declared that he intended to give a new constitution, and offered one in 1815; but it was rejected. The representatives of the people demanded the old constitution, and laid particular stress on the compact which it recognised between the people and the monarch. After the subject had been long under discussion, Frederic was on the point of cutting the whole matter short; but death prevented him. A constitution was at last agreed to by king William, September 26, 1819. It is founded on compact. (See *Constitution*.) The outlines are given in the preceding paragraph.

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* Würtemberg was originally the name of a castle near Stuttgart. Hence it became the name of a family, then of a duchy, and at last of a kingdom.

WURZBURG, GRAND-DUCHY OF, has been, since 1814, a part of the kingdom of Bavaria. The former bishopric of Würzburg was founded as early as 741, when Burchard was appointed the first bishop, by St Boniface, and the Frankish kings endowed the church with some lands which were subsequently much increased by grants from the emperors, and other acquisitions made by the bishops, until the principality of Würzburg was formed. A duke of Saxony, Sigismond, having been elected bishop of Würzburg, in 1440, his successors bore the title of dukes of Franconia. The archbishop of Mayence was the spiritual superior of the bishop of Würzburg, even after the grant of the archiepiscopal dignity, in 1752, to the latter, whose title was prince of the holy Roman empire, bishop of Würzburg, and duke of Franconia. The bishopric comprised 1840 square miles, with 250,000 inhabitants; and the annual income of the bishop amounted to 500,000 guilders. By the articles of the peace of Luneville the bishopric of Würzburg, with the other "immediate" ecclesiastical possessions in Germany, were given to Bavaria as an indemnity for her lost provinces on the Rhine, with the exception of a few districts, amounting to 318 square miles, and containing 37,000 inhabitants, given to other princes.' The last prince-bishop was compensated for the loss of Würzburg by an annual pension of 60,000 guilders, besides receiving 30,000 guilders as coadjutor of the prince-bishop of Bamberg. By the peace of Presburg, concluded Dec. 26, 1805, Würzburg was given to the former grand-duke of Tuscany, Ferdinand, who ceded the duchy of Salzburg, which he had received in 1803, with the dignity of elector to Austria; and the electoral title passed over to Würzburg. Bavaria was compensated for the loss. September 30, 1806, the new elector joined the confederation of the Rhine (see that article), and assumed the title of grand-duke of Würzburg. The events of 1817, and the arrangement of the congress of Vienna, made new changes. The grand-duke received back his hereditary state of Tuscany, and Würzburg was restored to Bavaria. The grand-duchy of Würzburg forming, at present, a part of the Bavarian circle of the Lower Maine, contains 1900 square miles, with 290,000 inhabitants, mostly Catholics. The country is level, but surrounded on three sides by chains of mountains. The Maine passes through a great part of it. The soil is very fertile, and produces much grain: the vine is particularly cultivated on the hills on the valley of the Maine. The best sorts of wine made are the Stein wine and the Leisten wine, which are produced only in the neighbourhood of the capital, and bring considerable sums into the country, which is not rich in minerals, and has few manufactures. Würzburg, the fortified capital of the grand-duchy, with 1970 houses, and 21,800 inhabitants (lon. 9° 55′ E., lat. 49° 46′ N.), has a fine situation, occupying both banks of the Maine, over which there is a bridge 540 feet long. Among the public buildings is the palace of the former prince-bishops, built in 1720, with a beautiful garden; at present generally occupied by the queen dowager of Bavaria. The extensive and rich Julius hospital, conducted in an excellent manner, with which is connected a lying-in hospital, a botanical garden, an anatomical theatre, and various collections, is well known. Among the churches are the large cathedral, said to have been founded by bishop Burchard, in the eighth century, but entirely rebuilt in 1042; the elegant new minster; the university church, with an observatory on the tower; &c. Würzburg contains many other fine buildings, public and private. It has a gymnasium, a central school of industry, a school for midwives, a swimming school, an institution for the blind, several seminaries, the orthopædic Caroline institute, a veterinary school, and a university, of which we shall speak below. It has also manufactures of woollen cloths, looking-glasses, leather, colours, glauber salt, tobacco, &c. The navigation on the Maine is considerable. Without the city is the citadel of Marienberg, on a hill 400 feet high. From a part of this height, called the *Leiste* (*Last*), comes the famous Leisten wine, and from the Steinberg (stone-mountain), also near the city, comes the Stein wine. The whole space occupied by the vineyards around the city is 7000 acres. Not far from here, in the former convent of the Cistercians, is the manufactory of power printing-presses, by Messrs König and Bauer, who invented the steam-press in London—an old convent has been converted into a manufactory of power presses!—The university of Würzburg was founded by the fifty-fifth bishop, in the year 1403, on the model of that of Bologna; but it soon sunk into decay. In 1582 it was re-established by a bishop Julius, who is justly considered the true founder. After him the university is called *Julia*. Medicine has always flourished in this institution, and mainly contributed to its reputation, whilst theology and philosophy were exclusively in the hands of Jesuits, until the abolition of the order. Many distinguished scholars have been professors here; and when Würzburg was ceded to Bavaria, the government of that country invited many eminent men to fill its chairs. It also established a Protestant theological faculty. But the changes which we have mentioned at the beginning of this article, were highly injurious to the institution, and, in 1809, it was reorganized according to the views of the Catholic clergy, who had remained far behind the spirit of the time. But when Würzburg was reunited with Bavaria, a new life was given to this institution. In 1818, Bavaria received a constitution; and the university has distinguished itself by the cultivation of constitutional law, which, however, has found no favour with government. Since 1814, the number of students has been generally from 650 to 700; sometimes more. The foreign students, about 150 in number, are mostly connected with the medical faculty. In 1821, a professorship of French law was established for the Bavarian subjects of the circle of the Rhine. There is a faculty for teaching political economy. The library contains above 100,000 volumes. Gustavus Adolphus carried the whole library which he found there to Sweden. We should also mention the musical institute, in which instruction is given gratis in singing and playing. The school-masters of Bavaria are here instructed in music. The Bavarian government seems to patronise the new university of Munich somewhat at the expense of Würzburg.

WYAT, Sir Thomas, a distinguished courtier of the age of Henry VIII., son of Sir Henry Wyat, master of the jewel office, was born in 1503, at Allington castle, in the county of Kent, the seat of the family. He commenced his academical education at Cambridge, which he completed at Oxford, and, on quitting the university, went on his travels to the continent. On his return to England, he appeared at court, where the reputation he had already acquired as a wit and a poet, introduced him to the notice of Henry, who knighted him, and retained him about his person. In the affair respecting the king's divorce from queen Catharine, Sir Thomas narrowly escaped losing the royal favour, by an indiscreet expression of his opinions on the subject; but, finding how the business must terminate, he had sufficient pliability of disposition to veer about in time, and, by a facetious remark on the possibility of "a man's repenting his sins without the leave of the court of Rome," so met the king's humour, that his influence increased rather than suffered any diminution. He was subsequently employed on several diplomatic missions to different powers, and died in 1541. His poetical works, which consist principally of love elegies, odes, &c., and a metrical translation of the Psalms, were published in conjunction with those of his contemporary and personal friend, the earl of Surrey. They evince more elegance of thought than imagination, while his mode of expression is far more artificial and laboured than that of his friend. He must not be confounded with a Sir Thomas Wyat who headed an insurrection in the reign of queen Mary.

WYCHERLEY, William, one of the wits and dramatists of the reign of Charles II., was the eldest son of a gentleman of Cleve, in Shropshire, where he was born about 1640. After receiving a school education, he was sent to France, where he embraced the Catholic religion. He returned to England a short time before the restoration, and renouncing Protestantism, was entered a gentleman commoner of Queen's college, Oxford, which he left without a degree, and took chambers in the Middle Temple. He paid, however, little attention to the law, but became a man of fashion on the town, and made himself known, in 1672, as the author of Love in a Wood, or St James's Park, a comedy. This piece brought him into much notice: he became a favourite of the meretricious duchess of Cleveland, and was much regarded by Villiers, the witty and profligate duke of Buckingham, who made him captain-lieutenant in his own company, and one of his equerries, or masters of the horse. He was likewise in great favour with the king himself; but he lost the king's countenance by a clandestine marriage with the countess of Drogheda, a young, rich, and beautiful widow, whose jealousy embittered their union. At her death, she settled her fortune upon him; but, his title being disputed, the costs of law and other encumbrances produced embarrassment, which ended in arrest. He remained in confinement seven years, until released by James II., who was so pleased with his comedy of the Plain Dealer, that he ordered his debts to be paid, and added a pension of £200 per annum. Wycherley's modesty rendering him unwilling to disclose the whole that he owed, he still remained involved until the death of his father, whose estate descended to him, but with considerable limitation, which prevented him raising money on it. He, however, discovered an expedient, by marrying, at the age of seventy-five, a young gentlewoman with a fortune of £1500, whom he recompensed with a good jointure. He died about fifteen days after the celebration of the nuptials, in 1715, enjoining his wife not to take an old man for her second husband. Besides the plays already mentioned, he wrote the comedies of the Gentleman Dancing-Master, and Country Wife, and a volume of poems, printed in 1660. The correspondence between him and Pope, then a youth, is printed in the collection of that poet's letters. He is now only remembered as a dramatist, and that principally by his Plain Dealer, and Country Wife, the latter of which is better known by the title of the Country Girl—a name given to a modern adaptation, which gets rid of much objectionable coarseness. His Plain Dealer may be deemed an English counterpart of the Misanthrope of Molière, displaying more license, with considerable wit, humour, and comic force of character. The Posthumous Works of Wycherley, in Prose and Verse, were published by Theobald, in 1728.

WYCLIFFE. See *Wickliff.*

WYCOMBE, HIGH, OR CHIPPING; a borough town in Buckinghamshire, 29 miles west by north from London. Though not the largest, it is the handsomest town in the county, and owes much of its prosperity to the rivulet called Wycombe stream, which sets in motion a considerable number of corn and paper mills, and after a long winding course, falls into the Thames below Marlow. It consists of one large street, with several smaller branching from it, and stands on the high road from London to Oxford. The inhabitants are chiefly employed in the paper-mills, lace manufactures, and malting trade. Population in 1831, of borough, 3101; of parish, 3198.

WYE; a small river of South Wales, which rises on the mountain of Plynlimmon, and falls into the Severn. It is distinguished for the beauty and variety of its scenery.

WYKEHAM, William of, bishop of Winchester, and lord high chancellor of England, a distinguished prelate of the fourteenth century, was born at Wykeham, a village in Hampshire, in 1324, of respectable parents, but so poor, that, but for the liberality of the lord of the manor of Wykeham, a liberal education would have been beyond his reach. On the completion of his studies, he became private secretary to his patron, and was by him recommended to the notice of Edward III. In 1356, Edward appointed him to superintend the erection of Windsor castle as surveyor of the works. (See *Windsor.*) On one of the towers he put an inscription, This made Wykeham. His enemies exclaimed against his presumption. Wykeham, however, assured the king that he had intended to intimate, that his diligence in forwarding the building had raised him, through the favour of his prince, to his present rank. Wykeham, having taken holy orders, rose rapidly to the highest dignities in church and state. In 1366, he was elevated to the rich see of Winchester, and, in 1367, reached the highest point of his career, the chancellorship of England. This office he discharged with great ability nearly four years, distinguishing himself by his orderly management of his diocese, and by his disinterestedness in dedicating a large portion of his temporalities to the improvement of his cathedral, and the foundation of a grammar school at Winchester, which still exists as a monument of his munificence. (See *Winchester.*) In 1371, a party at court opposed to the increasing wealth and influence of the clergy, and headed by John of Gaunt, duke of Lancaster, succeeded in persuading the parliament that his power was too great for a subject: and he was compelled to resign the seals. For the remainder of this reign, he continued apart from the court, consoled for his disgrace by the attachment of the people. On the accession of Richard, he was restored to his dignities and emoluments. In 1386, he completed his noble foundation of New college, Oxford. In the chapel belonging to this establishment, his crosier, or pastoral staff, is still preserved, supposed to be the only one in England. Scarcely was this college finished, when he commenced erecting another at Winchester, which he also lived to see finished. In 1391, he resigned the chancellorship. His death took place in 1404. See his *Life*, by Lowth; and Milner's *History of Winchester*.

WYMONDHAM, OR WINDHAM; a market-town in the county of Norfolk, situated on the high road from Norwich to London, distant from the latter 100 miles, north-east by north. It first became a place of importance in the reign of Henry I., in consequence of the foundation of a priory of black monks by William D'Albini, which was, in 1448, elevated to the rank of an abbey. The two Kets, tanners and natives of this town, who endeavoured to inflame this county in the reign of Edward VI., used to meet their companions under an oak in the neighbourhood, a part of which is still pointed out as a kind of historical record; after they were defeated by the Earl of Warwick, the elder was hanged in chains at Norwich castle, and the younger on the steeple of Wymondham church. The town has suffered severely by the two dreadful scourges of fire and plague; by the former in 1615, when upwards of 300 houses were consumed, and by the latter in 1631. In the market-place is an ancient cross. The greater portion of the inhabitants are employed in weaving, chiefly bombasins and crapes. The manufacture of wooden-wares is also carried on in a small way. Population of town and parish in 1831, 5485.

WYNDHAM, SIR WILLIAM, an eminent English senator and statesman, was born at Orchard-Wyndham, in Somersetshire, in 1687. His father, of the same name, had been created a baronet by Charles II. He was educated at Eton, whence he was removed to Christ-church, Oxford. On quitting the university, he made the tour of the continent, and, on his return, was chosen knight of the shire for the county of Somerset. He soon became conspicuous as one of the ablest members of the house of commons; and, on the change of ministry which produced the treaty of Utrecht, was appointed master of the buck-hounds, then secretary at war, and, in 1713, chancellor of the exchequer. On the breach between the earl of Oxford and viscount Bolingbroke, he adhered to the interests of the latter. Upon the death of queen Anne, he was displaced; and, in the ensuing parliament, took a leading part in opposition, and signalized himself by advocating the treaty of Utrecht, and in his defence of the duke of Ormond and earls of Oxford and Strafford, when impeached by the house of commons. On the breaking out of the rebellion in Scotland, under the earl of Mar, in August, 1715, he was arrested at his seat in Somersetshire, on suspicion of being concerned in that event; but he made his escape from the messenger. On a proclamation being issued for his apprehension, he soon after surrendered himself, and was committed to the Tower, but was never brought to trial. On regaining his liberty, he continued his opposition, but on more broad, and less Jacobitical grounds than heretofore, and remained in strenuous contest with ministers until his death, in 1740. His son, the daughter of the duke of Somerset, became, on the death of the duke, earl of Egremont, the title having been granted to that nobleman, with remainder to his grandson. The latter succeeded the first earl of Chatham as secretary of state, and died in 1763.

WYTE, OR WITE, in the ancient English customs; a pecuniary penalty or mulct. The Saxons had two kinds of punishments—*were* and *wyte*, the first for the more grievous offences: the *wyte* was for the less heinous ones. It was not fixed to any certain sum, but left at liberty to be varied according to the nature of the case.

WYTTENBACK, DANIEL; a learned philologist of the Dutch school, was a native of Berne, and born in 1746. His father having been appointed a professor at Marburg, he was admitted a student of that university. He afterwards went to Göttingen to study under Heyne, with whose assistance he published, in 1769, *Epistola Critica ad Ruhnkenium super nonnullis Locis Juliani cui accesserunt Animadversiones in Eunapium et Aristænetum.* This learned work procured him the friendship of Ruhnken, whom he visited at Leyden, and who obtained for him the professorship of philosophy and literature in the college of the Remonstrants at Amsterdam. He subsequently devoted his talents to the illustration of the works of Plutarch, and, in 1772, printed, at Leyden, the treatise of that writer, *De Sera Numinis vindicta*, with a learned commentary. In 1779, the magistrates of Amsterdam created a philosophical professorship at an institution called the Illustrious Athenæum, to which Wyttenbach was presented; and, in 17 he was appointed professor of rhetoric at Leyden, where he died in 1819. The result of his researches relative to Plutarch, appeared in his excellent critical edition of the Moral Works of Plutarch, published at Oxford (1795—1810, 7 vols. 4to., and 12 vols. 8vo.) Professor Wyttenbach was the author of *Præcepta Philosophiæ Logicæ* (Amst. 1781, 8vo.); *Selecta Principum Græcorum Historicorum*, with notes (1793 and 1807); *Vita Ruhnkenii* (1800, 8vo.); and some other works. His Opuscula appeared at Leyden in 1821; and there is a Life of him by Mahne (Ghent, 18[illegible],

X

X; the twenty-fourth letter of the English alphabet, taken from the Latin, into which it was adopted from the Greek. The pronunciation of it, in the middle and at the end of words, is like that of *cs* or *ks*. At the beginning of a word, it has precisely the sound of *z*; and the English alphabet might therefore dispense with this character without any inconvenience, except where etymology re quires it. The Italians never use it, on account of its guttural character, which is hostile to the spirit of their language. When it occurs between two vowels, they supply its place by *ss*, as in *Alessandro:* when it immediately precedes *c*, they substitute another *c* for it, as in *eccellente*. In Spanish, the letter *x* had formerly two very different sounds, one like that of *s* or *cs*, derived from the Latin, and another strongly guttural, derived from the Arabian. At present, however, it is pronounced like *s* when it is followed by a consonant, and like *ks* when it comes between two vowels. The guttural sound formerly represented by *x*, is now represented by *j* before *a*, *o* and *u*, and by *g* before *e* and *i;* so that it is no longer necessary to put a circumflex over the vowel following the *x*, when the latter is to be pronounced like *ks*. The Germans, in words belonging to their language, have generally resolved the *x* into *ks*, *gs*, or *chs;* and only when the derivation of the word containing the *x* is uncertain, so that it cannot be determined into what letters the *x* ought to be resolved, this character is retained. In French, *x* has also all the various pronunciations of *s*, *cs*, *gz*, and *z*, according to circumstances. In many cases, it is not pronounced at all, and only indicates the plural number to the eye. The Latins call *x* a semivowel and one of the letters termed *double*. The Greek characters for this letter were Ξ and ξ; and the character which we now use to designate X, was their guttural. From the circumstance that this guttural is the initial letter in ΧΡΙΣΤΟΣ (*Christ*), the letter *x* of the Latin alphabet—the same in figure, but different in sound,—acquired much importance at an early period, particularly in the monogram $\overset{P}{X}$, composed of the two first Greek letters of the word Χριστος. Constantine the Great used it both on his coins, and military ensigns. Several other emperors imitated his example; and this monogram came into common use with the Christians, as on lamps, and other utensils, on tombs. &c. Constantine, however, did not invent this monogram, but merely gave it the Christian meaning. It is found on ancient medals, and coins; and its precise meaning there is not ascertained. As persons who are unable to write are accustomed to put a cross instead of their signature, or, at least, to touch the pen of him who makes the name for them, such crosses, when the signatures are printed, are represented by an ⋈, long strings of which may be found at the end of treaties concluded between the United States and the Indian tribes. X, with the Romans, denoted ten, being composed of two V s, thus $\overset{\mathrm{V}}{\Lambda}$. (See *V.*) In this position, ⋈, it signifies a thousand, and with a dash over it ($\overline{\mathrm{X}}$), ten thousand. X enters largely into the Roman system of notation. When it stands before a letter designating a larger number than itself, it must be subtracted; when after, it must be added: thus XC is equal to ninety; CX to a hundred and ten. *x*, *y*, *z*, are commonly used in mathematics, to denote variable quantities, whilst the letters at the beginning of the alphabet are used for the constant quantities. St Andrew's cross, so called, has the shape of an X, the legend of this saint representing him as having been crucified on such a cross. See *Cross*.

XAGUA BAY; a large bay on the south coast of Cuba; lon. 81° 20′ W.; lat. 22 10′ N. This is one of the best ports in the West Indies, and is [illegible] miles in circumference, surrounded with [illegible], which break the force of the winds.

XALAPA; a town of the Mexican republic, in the state of Vera Cruz; 52 miles north-west of Vera Cruz; lon. 96° 55′ W.; lat 19° 30′ N.; population, 13,000; a bishop's see. The sky at Xalapa, during the summer is beautiful and serene, but from December to February, has a melancholy aspect. The sun and stars are frequently invisible for two or three weeks together. The wealthy merchants of Vera Cruz have country houses at this town, where they enjoy a cool and agreeable retreat, while the coast is almost uninhabitable, from the mosquitoes, the heat, and the yellow fever. The elevation of this town above the sea is 4264 feet. This town gives name to the purgative root called *jalap*, or *Xalap*. See *Jalap*.

XALISCO. See *Guadalaxara*.

XANTEN (*Santen*), a town in the Prussian province of Cleves-Berg, in the government of Düsseldorf, not far from Rheims, with 2650 inhabitants, has some manufactures, and is remarkable on account of the Roman antiquities which are found in its neighbourhood. It is supposed that *Ulpia Castra* stood here, and *Vetera Castra* in the neighbourhood. The foundations of an amphitheatre are yet visible. Some also think that the traces of the *prætorium* of Quintus Varus are to be seen on the Vorstenberg, and in the neighbourhood of the old castle, those of the *Coloniu Trajana*.

XANTHIC OXIDE, is the name given by Dr Marcet to a very rare species of calculus. It is of a reddish or yellow colour, soluble both in acids and alkalies, and its solution in nitric acid, when evaporated, possesses a brilliant yellow tint, from which (ξανθος, *yellow*) it derives its name.

XANTHIPPE; the scolding wife of Socrates, whose name, like so many others, has come down to posterity only by being associated with that of an illustrious character. According to what we are told of her it required the patience of a sage like Socrates to endure her humours. When Alcibiades asked Socrates how he could live with such a woman, he answered, "Because she serves to exercise my patience, and makes me able to bear all the injustice of others towards me." Xenophon makes Socrates, in the well-known philosophical banquet, defend his wife against the uncivil attacks of Antisthenes. On one occasion, when Alcibiades sent an excellent cake to his philosophical master, she snatched it out of the basket in which it had been brought, and trod upon it. "Thou wilt now not be able to eat of it," was all the remark which Socrates made. Xanthippe, however, did justice to the incomparable character of her husband: she publicly acknowledged that she had always seen him calm, even in the most trying circumstances. This trait might lead us to suspect that the character of Xanthippe was intentionally thrown too much into the shade, in order to make the contrast with that of Socrates the greater. However this may be, her name has become synonymous with that of a scold, who imbitters the life of her husband.

XANTHOGEN, (from ξανθος, *yellow*, and γενναω, *to generate*,) is the name given by M. Zeise to the radical of a hydracid, which he calls hydroxanthic acid. The acid is a compound of carbon, sulphur, and hydrogen, and the radical he supposes to be a sulphuret of carbon.

XANTHUS; see *Scamander;* also a town of Lycia, on the river of the same name, at the distance of about fifteen miles from the sea-shore. The inhabitants are celebrated for their love of liberty and national independence. Brutus laid siege to their city; and, when they could no longer defend themselves, they set fire to their houses, and destroyed themselves. The conqueror wished to spare them; but, though he offered rewards to his soldiers, if they brought any of the Xanthians alive into his presence, only 150 were saved.

XANTIPPUS; a general of the Lacedæmonians, of an unpromising exterior, but distinguished for his talents. His countrymen sent him with a small army, in the first Punic war, to assist the Carthaginians against the Romans. The Roman consul, Regulus, had beaten the Carthaginian fleet, though much superior to his own, had effected a landing in Africa, defeated the armies of Carthage, and advanced as far as the city. The hard conditions of peace prescribed by him exasperated the Carthaginians. They gave the chief command of their forces to Xantippus. He manœuvred so as to bring the Romans into a disadvantageous position, overcame them, and even took their general, Regulus, prisoner. The Carthaginians thus again obtained the superiority over the Romans. But, much as they owed to Xantippus, they entertained a paltry jealousy that he would gain too much influence. They therefore sent him back to Lacedæmon, and are said to have given his attendants secret orders to kill him on the way: according to some accounts, they gave him a leaky vessel, in which he perished. This charge, however, is by no means proved; and some Greek writers say that he arrived safely in his native country.—There was also an Athenian general of this name, who, with Leotychides, defeated the Persian fleet at Mycale. A statue was erected to his honour in the citadel of Athens. He made some conquests in Thrace, and increased the power of Athens. He was father to the celebrated Pericles by Agariste, the niece of Clisthenes, who expelled the Pisistratidæ from Athens.

XAVIER, St Francis, a celebrated Spanish missionary, surnamed the *apostle of the Indies*, and one of the first disciples of Ignatius Loyola, was born April 7, 1506, in the castle of Xavier, at the foot of the Pyrenees. His father was a gentleman of Navarre. He was the youngest of many children, almost all of whom entered the army. He himself, however, early manifested a disposition for study. He pursued his studies at the college of St Barbe, in Paris, and taught philosophy in the college De Beauvais, in the same city, at the time when Ignatius Loyola entered this college to resume his studies. Loyola was already occupied with his plan of establishing a society for the conversion of infidels, and endeavoured to induce Xavier to take part in it. He at first declined; but, after Le Fèvre, or Favre, had associated himself with Loyola, he yielded. Laynez (q. v.), Salmeron, Nicholas Alphonso, surnamed Bobadilla, and Rodriguez, a Portuguese, followed. All six, together with Loyola, on the day of Assumption, in the year 1534, took the vows of poverty and chastity, to which they added that of making a pilgrimage to the holy sepulchre, and of devoting themselves to the conversion of infidels. In case of failing in this attempt, they were to do such service to the church as the pope should direct. Towards the end of 1537, they met at Venice, according to agreement; and, at this time, their number had been increased by the accession of three more persons. Soon after, Xavier was ordained priest, and, when John III., king of Portugal, desirous of propagating the Christian faith in his Indian possessions, requested of Ignatius Loyola a suitable missionary, Xavier determined to undertake the office. April 8, 154
he embarked at Lisbon, and, in 1542, arrived a
Goa. According to the custom which he alwa
followed, he took lodgings in the hospital, wher
he spent his leisure time in attending on the s
He preached, and converted to Christianity ma
heathens, Jews and Mohammedans there, and o
the coast of Comorin, at Malacca, Travancor
Macassar, in the Molucca islands, Malacca, Ceyl
Cochin, and, in 1548, returned to Goa, where
college of Jesuits had been established. Ther
he went to Japan; but, not having been able t
learn the language of the country, he met with li
success. He ascribed this, in part, however, to th
simplicity of his appearance as a humble pilgri
and resolved to adopt a different fashion. He pre
sented himself to the king of Japan in rich attir
furnished with letters from the viceroy of the Indi
and the bishop of Goa, and with rich presents. H
now succeeded perfectly. The king not only gra
him permission to preach, but also issued an ed
which permitted every one to embrace the ne
faith. He converted, according to his statemen
above 3000 souls, who, twenty-five years later
were found faithful to their religion, though en
tirely detached from the rest of Christendom. A
a later period, other missionaries obtained a l
greater success. Xavier resolved to introdu
Christianity into China. He embarked with a bod
of attendants, and went to Malacca; but don Al
varez, governor of this island, refused to let the ex
pedition proceed. Xavier, however, was not to b
stopped. He departed alone, in a Portuguese ve
sel, for the island of Sancian, opposite to Cant
twenty-five leagues from the continent; but, af
having made all the preparations for his peril
enterprise, he fell sick, and died, after a long an
painful illness, December 2, 1552, having spent te
years and a half in his laborious mission. It i
said that he was buried on the sea-shore, and lim
put into the grave to consume the body, which
however, being afterwards disinterred, was foun
entirely fresh; and, according to the poetical con
ception of the Catholics, which appears in so many
legends of saints, a sweet odour exhaled from th
whole body. A short time after, his remains wer
deposited in St Paul's church at Goa. Many mir
acles having been ascribed to Xavier, he was beati
fied by Paul V., in 1619, and canonized by Gregory
XV., in 1622. His extant works are Five Boo
of Epistles (Paris, 1631, 8vo.): a Catechism
Opuscula. Bartoli, a Jesuit, wrote, in Italian, th
life of St Xavier, which was translated into Lat
by Jannin, in 1709. Xuarès also published Vi
*iconologica del Apostol de las Indias, S. Francis
Xavier* (Rome, 1798).

XEBEC; a small, three-masted vessel, navigat
in the Mediterranean sea, and distinguished fro
other European vessels by the great projection o
the prow and stern beyond the cut-water and ster
post. The sails are, in general, similar to those o
the polacre; but the hull is different. Being ge
erally equipped as a corsair, the xebec is construct
with a narrow floor, for the sake of speed, and of
great breadth, so as to be able to carry a consider
able force of sail without danger of overturning. A
these vessels are usually very low built, their dec
are made very convex, in order to carry off th
water more readily. But, as this convexity wou
render it difficult to walk thereon at sea, particular
when the vessel rocks by the agitation of th
waves, there is a platform of grating exten

along the deck from the sides of the vessel towards the middle, whereon the crew may walk dry-footed, while the water is conveyed through the grating to the scuppers. The xebecs which the Algerines used, carried from 300 to 450 men, two thirds of whom were commonly soldiers. They had from sixteen to twenty-four cannon. See a representation of a xebec in Plate 82.

XENIA (from the Greek word Ξένιον); presents which were given guests among the Greeks and Romans. The Roman epigrammatist Martial inscribed the thirteenth book of his epigrams *xenia*. They are a number of distichs dedicated to his friends and patrons, and each contains praise or blame under the head of some subject connected with the table. Schiller's *Musenalmanach* for the year 1797 (Tübingen) contained more than four hundred distichs bearing the same name, and having reference principally to the then existing state of literature in Germany. They are ascribed to Schiller and Göthe.

XENOCRATES; an ancient philosopher, born in Chalcedon, and educated in the school of Plato, whose friendship he gained. Though of a dull and sluggish disposition, he supplied the defects of nature by unwearied attention and industry. Plato esteemed him much; but his want of polished manners often called forth his teacher's advice to sacrifice to the Graces. He travelled with Plato to Sicily, and after his death went with his fellow scholar Aristotle to Asia Minor, but soon returned. He succeeded Speusippus in the school of Plato, about 339 years B. C. He was remarkable as a disciplinarian, and required that his pupils should be acquainted with mathematics before they came under his care. He even rejected some who had not that qualification, saying that they had not yet found the key of philosophy. He recommended himself to his pupils not only by precepts, but more powerfully by example. Alexander sent some of his friends with fifty talents for the philosopher. But to offend the monarch, he accepted a small sum, about the two hundredth part of one talent. The courtesan Lais is said to have tried every art in vain to triumph over the virtue of Xenocrates. His integrity was so well known that, when he appeared in the court as a witness, the judges dispensed with his oath. He died in his eighty-second or eighty-fourth year, after he had presided in the academy for above twenty-five years. It is said that he fell, in the night, with his head into a basin of water, and that he was suffocated. He had written above sixty treatises on different subjects, all now lost.

He is to be distinguished from another Xenocrates, surnamed the *Physician*, who lived in the time of Tiberius or Nero, and of whose writings only one work, on the use of aquatic animals as food, exists. It gives a pretty complete idea of the knowledge then existing of the natural history of fishes and shell-fish.

XENOPHANES; a Greek philosopher, cele[illegible] as the founder of the Eleatic school. He was a contemporary of Pythagoras and Anaximander, and is said to have attained to the age of a [illegible] years. Having been banished from his [illegible] city, Colopho, he went to Sicily, and thence to [illegible] Magna. He settled, about 536 B. C., at Elea, and hence his system, and the school which he founded, derive their name. He did not [illegible] satisfied with the opinions of his predecessors, in philosophy, but made new inquiries into the nature of things. He attacked, in his *silli*, the mythological fables of the gods given by Homer and Hesiod, and inclined to an ideal pantheism. His chief doctrines are these: All Being is one, unchangeable, and perfect: this Being is called God. He is not to be represented under any human form; but all forms proceed from him, and he is able to do every thing. The apparent variety of things is not real. He is said to have maintained that every thing originated from earth and water, and to have considered the moon an inhabited body. He denied the possibility of predicting future events, and asserted that there is much more good than evil in the world. In general, he complained of the uncertainty of human knowledge. Of his poems, in which he treated of philosophical and other subjects, we have only fragments contained in the works of Athenæus, Plutarch and others. The fragments of his didactic poem Περὶ Φύσεως have been collected in the *Poesis philosophica* of Stephanus; subsequently, and more completely, by Fülleborn, and recently by Brandis, German philologists.

XENOPHON; a celebrated historian and general, was born at Athens, about 450 B. C. He lived during a period in which the greatest political and intellectual excitement existed at Athens, and in which the most distinguished men, of whom he was one, appeared on the stage. Xenophon was a favourite disciple of the immortal teacher of wisdom, Socrates; and from his writings, especially his Apology, and the *Memorabilia* of Socrates, we learn the true spirit of the Socratic philosophy. Xenophon was less a speculative than a practical philosopher. He dedicated himself to that state in which he was born, and fought, together with his teacher, in the Peloponnesian war. When the Persian prince, Cyrus the Younger (so called in contradistinction to the founder of the monarchy), contended with his elder brother Artaxerxes Mnemon for the throne, the Lacedæmonians sent him auxiliaries, among whom Xenophon served as a volunteer. He became a favourite of Cyrus, who was defeated and lost his life in the plains of Babylon. The principal officers of the auxiliary army having been likewise killed in battle, or taken prisoners by artifice, and then put to death, Xenophon was selected to command the Greek forces, 10,000 men strong. They were in a most critical situation, in the midst of a hostile country, above 2000 miles from home, without cavalry, surrounded by enemies and innumerable difficulties; but Xenophon was able to inspire them with confidence, to repress insubordination, and to lead them home to Greece. They marched 1155 parasangs, or 34,650 stadia, in 215 days. This retreat is famous in the history of war. It has been compared to various retreats in modern times; for example, that of Moreau, in the south of Germany; but the circumstances are too different to admit of any proper parallel being drawn. Xenophon himself has described this retreat, and, at the same time, the whole expedition of the younger Cyrus, in his *Anabasis*, which has been geographically illustrated, particularly by James Rennell. That Xenophon is actually the author of this work has been proved by C. W. Krüger (author of the *Vita Xenophontis*), in his work *De Authentia et Integritate Anabaseos Xenophonteæ* (Halle, 1824). The expedition might have been forgotten, or, at least, very imperfectly known, had not the Grecian general been so excellent a writer. Xenophon afterwards accompanied the Spartan king Agesilaus to Asia, on his expedition against the Persians. He enjoyed his confidence; he fought under his standard, and conquered with him in the Asiatic provinces, as well as at the battle of Coronæa. His fame, however, did not escape the aspersions of jealousy; he was publicly banished from Athens for accompanying Cyrus against his brother; and, being now without a home, he retired to Scillus, a small town of the Lacedæmonians, in the neighbourhood of Olympia. In this solitary retreat, he dedicated his time to literary pursuits; and, as he had acquired riches in his Asiatic expeditions, he began to adorn the country which surrounded Scillus. He built a magnificent temple to Diana, in imitation of that of Ephesus, and spent part of his time in rural employments, or in hunting in the woods and mountains. His peaceful occupations, however, were soon disturbed by a war which arose between the Lacedæmonians and Elis. The sanctity of Diana's temple, and the venerable age of the philosopher, were disregarded; and Xenophon, driven by the Eleans from his favourite spot, retired to the city of Corinth. In this place he died, in the eighty-seventh year of his age. Besides the works already mentioned, Xenophon wrote the Banquet of the Philosophers, a counterpart of a composition of Plato, and several smaller works, relating to agriculture, politics, and the science of war; also a history of the Greeks, in seven books, and a continuation of the history of Thucydides, down to the battle of Mantinea; and the Life of Cyrus the Elder, more known under the name of Cyropædia. This celebrated production is not a real history, but rather a historical novel. It contains Xenophon's ideas respecting the best form of government; and the biography of the greatest ruler known at that time is embellished to illustrate the writer's principles. Xenophon considered the monarchical form of government the best; and his purpose seems to have been to recommend it to his countrymen. His style in general, and particularly in this work, is a model of elegant simplicity. Xenophon is therefore one of those classics which are particularly selected for the instruction of youth, though his philosophical works are not proper for beginners. The Greeks esteemed his merit as a writer so high that they called him the "Greek bee," and the "Attic muse." His works have been often published, separately and together. The most recent editions are by Schneider and Weiske. There is no other instance on record of a man who was at the same time so great a general, so excellent a writer, and so amiable a philosopher.

Another Xenophon, an amatory poet, lived towards the beginning of the third century A. D., was a native of Ephesus, and wrote a tale called the History of Habrocomes and Anthia.

XERES, Francis; a Spanish historian, who accompanied Pizarro in his conquest of Peru, and acted as his secretary. By order of the conqueror, he addressed a detailed account of this great expedition to Charles V. The work of Xeres appeared at Salamanca in 1547, folio, under the title *Conquista del Piru: Verdadera Relacion de la Conquista del Piru y de la Provincia del Cuzco llamada la Nueva Castilla*, &c. It is sometimes to be found at the end of Oviedo's Natural History of the Indies. The work of Xeres has been translated into Italian, and inserted by Ramusio in the third volume of his Collection of Travels and Voyages. Notwithstanding the great partiality of Xeres for the conqueror of Peru, his history is important, as he was an eye-witness of every thing he relates, and took an active part in the war which decided t fate of that beautiful country.

XERES DE LA FRONTERA: a town Spain, in Seville, on the Guadalete; fifteen mi north-north-east of Cadiz, and thirty-two south Seville; lon. 6° 15′ W.; lat. 36° 41′ N.; popula- tion, between twenty and thirty thousand. It pleasantly situated, surrounded with walls, streets wider than those of Cadiz, clean and nea paved, and some of the houses splendid. It is ancient town, supposed to be built on the site Asta Regia. In the environs is produced the w called *sherry*, a corruption of Xeres. Some wines are also produced in this neighbourhood, which the best known is the *vino tinto*, or *wine*. The country around is very fertile, an the climate delightful.—Near this town a batt was fought between the Moors and Goths, in 71 in which Roderic, the last king of the Goths, l his life.

XERES WINE. See *Sherry*.

XERXES I., king of Persia, famous for his u successful attempt to conquer Greece, began reign in 485 B. C., and was the second son of D rius Hystaspes. He was preferred to his broth Artabazanes, who had been born before his fath was raised to the throne; while Xerxes was bo after that event, and was the son of Atossa, daug ter of Cyrus. This preference caused no strug between the brothers. After having subdued Eg in a single campaign, he thought himself able execute the plan of conquering Greece, which h been already conceived by his father. He colle ed for this purpose an immense army. The h torians estimate it at a million of men. In probability, the Greeks greatly exaggerated t number of their enemies; and the train of wom and slaves, who followed the army, made, at lea half of its numerical amount: still, however, t power of Xerxes was beyond all comparison su rior to that of the Greeks. But these fought their home and their freedom, and the Persian s diers were hirelings. By means of a bridge of b Xerxes crossed the Hellespont. The Greeks aw ed their enemy on the frontier of their country, the pass of Thermopylæ. After the heroic Leon had fallen with his Spartans (see *Leonidas* *Ephialtes*), Xerxes pressed forward, and bur Athens, which had been forsaken by its inhabita The first naval battle between the two powers, Artemisium, had been undecisive; but it inspi the Greeks with new confidence; and the sec naval action, at Salamis, in which, if we beli the Greek historians, two thousand Persian ves were engaged against three hundred and eig Greek, eventuated in the defeat of the Persi Xerxes now quitted Greece, leaving behind his best general, Mardonius, who, not long aft was entirely beaten at Platææ. Xerxes hims returned from his expedition in the most humili ing manner. The bridge of boats over the Hel pont had been destroyed and he passed the s in a small fishing boat. He now gave himsel to debauchery; his conduct offended his subje and Artabanus, the captain of his guards, consp against him, and murdered him in his bed, in twenty-first year of his reign, about 465 years fore the Christian era. The personal accompl ments of Xerxes have been commended by an authors; and Herodotus observes, that there not one man among the millions of his army, was equal to the monarch in comeliness or sta or that was as worthy to preside over a great and extensive empire. Justin exclaims, that the vast armament which invaded Greece was without a head. It is said of Xerxes, that, when he reviewed his army from a stately throne in the plains of Asia, he suddenly shed tears on the recollection that, of the multitude of men whom he saw before his eyes, in one hundred years, none would be living. He is also said to have ordered chains to be thrown into the sea, and the waves to be whipped, because the first bridge which he had laid across the Hellespont had been destroyed by a storm. He cut a channel through mount Athos, and saw his fleet sail in a place which before was dry ground. The very rivers are said to have been dried up by his army as he advanced towards Greece, and the cities which he entered reduced to want and poverty.

XERXES II. succeeded his father, Artaxerxes Longimanus, on the throne of Persia, about 425 years B. C., and was assassinated in the first year of his reign, by his brother Sogdianus.

XIMENES, Francisco, cardinal, archbishop of Toledo, and prime minister of Spain, a great statesman, to whom Spain is very much indebted, was born in 1437, at Torrelaguna, a small village in Old Castile, where his father was a lawyer. He studied at Salamanca, travelled afterwards to Rome, and obtained a papal bull, which secured to him the first vacant benefice in Spain. The archbishop of Toledo refused to give him any place; and, Ximenes having manifested irritation upon this refusal, he caused him to be imprisoned. Ximenes, nevertheless, recovered his freedom, and the cardinal Gonzales Mendoza, bishop of Siguença, appointed him his grand vicar. He afterwards entered the Franciscan order, became father confessor to queen Isabella of Castile, and, in 1495, archbishop of Toledo. He did not accept this dignity till after many refusals, and an express command from the pope. As an archbishop, he was very zealous, conducting as a father towards the poor, abolishing a multitude of abuses, and adhering stedfastly to his resolution, that the public offices should be filled with honourable and well-qualified men. He gave excellent rules to the clergy of his diocese, and, in spite of all opposition, effected a reform in the mendicant orders of Spain, founded, in 1499, a university at Alcala de Henares, and undertook, some years after, an edition of the Old Testament in six languages. (See *Polyglot.*) Before this, in 1514, he had published at Henares, an edition of the New Testament, in the original tongue. His activity was also displayed in other ways. Dissensions prevailed in the royal family. Philip of Austria, son of the emperor Maximilian I., had married Joanna, the only daughter of Ferdinand the Catholic of Arragon, and of Isabella of Castile. After the death of the latter, Philip received the kingdom of Castile, in right of his wife, the sole heiress of her mother. This gave rise to disputes between him and his father-in-law, which were composed by Ximenes. After Philip's early death (1506), Ferdinand became regent of Castile, for his grandson, afterwards the emperor Charles V., who was a minor. On this occasion he had been much assisted by Ximenes. Ximenes now received from the pope the cardinal's hat, was appointed grand inquisitor of Spain, and had a great share in the affairs of state. But as he knew Ferdinand's jealous disposition, he left the court, and returned to his archbishopric. The conversion of the Moors, and the plan of wresting some provinces from these unbelievers, particularly occupied his attention. With this view, he formed the project of passing over to Africa, in order to take the fortress of Oran, which was in the possession of the Moors. He applied the income of his archbishopric (300,000 ducats), the richest in Europe, to this purpose. A mutiny which arose among a part of his troops, who disliked the idea of having a clergyman for their leader, he suppressed immediately by strict measures. In May, 1509, he landed on the coast of Africa. In the dress of an archbishop, over which he wore a suit of armour, surrounded by priests and monks, as if in a religious procession, he led the land forces. A battle soon followed in the neighbourhood of Oran, in which the Moors were defeated. The fortress was immediately taken, and the garrison put to the sword. Ximenes caused Oran to be fortified anew, changed the mosques into churches, and then returned as a conqueror to Spain, where Ferdinand received him with much pomp. When the latter died, in 1516, his grandson Charles being still a minor, Ximenes became regent of Spain, and effected many important changes during his regency, which continued only two years. He brought the finances into order, paid the crown debts, and restored the royal domains which had been alienated. He humbled the Spanish nobility, who hated him on account of his pride and severity. He caused the laws to be observed, and placed the Spanish military force upon a respectable footing. All his plans and conceptions were great. He possessed great sagacity and firmness, was slow in decision, but quick in execution. The Spanish cabinet was much indebted to him for the consideration in which it was held in Europe for a long time after his death. We have already mentioned that he was a patron of science. He was truly a great man. He has been accused, not entirely without foundation, of pride, severity, and even cruelty; but circumstances sometimes rendered such conduct necessary: his severity was particularly directed against the arrogance of the nobility of the kingdom. Upon various occasions he showed a benevolent spirit. Upon his entrance into Oran, when he saw the numerous corpses of the Moors who had fallen, he shed tears. "They were unbelievers," said he, "but men, who might have been brought to Christ. Their death has deprived me of the principal advantage of this victory." He died in 1517. His life, and his administration, have been the subject of various works.—See *Histoire du Cardinal Ximénes, par Fléchier, Evéque de Nismes* (Amsterdam, 1700), and the *Historie von dem Staatsministerio des Cardinal Ximenes* (Hamburg, 1791).

XIMENES, Augustin Louis, marquis de, a well-known French poet, descended from a family originally Spanish, was born in Paris in 1726. He was a soldier in his youth, and fought at the battle of Fontenai (May 11, 1745). He then became the associate of the most distinguished French *savans* of the eighteenth century, particularly Voltaire. Ximenes wrote some tragedies, among them *Don Carlos;* a poem called *César au Sénat Romain;* and another, in which he illustrates the idea, that the sciences contributed as much to the glory of Louis XIV., as he did to their progress. Two *Discours* of his, one in praise of Voltaire, the other on the influence of Boileau on his century, are esteemed. He also wrote *Lettres sur la Nouvelle Héloïse de J. J. Rousseau.* His works appeared in 1772 and 1792; the later ones under the title of *Codicille* *d'un Vieillard.* Ximenes was a friend of the revolution, but without passion or selfishness. He took no part in the proceedings, nor did he hold any office. His last work is *Discours au Roi.* He died at Paris in 1817.

XIMENES, LEONARDO; a distinguished mathematician, who died in Florence in 1786, in his sixty-fifth year. He did much for hydraulics and astronomy.

XIPHIAS. See *Sword-Fish.*

XUTHUS; the third son of Hellen and of Orseis. As he was passed over by his father in the partition of his lands, and his brothers expelled him from Thessaly, he went to Attica, where he assisted Erictheus against the Eleusinians, and married his daughter Creusa. But he was driven away again by his brothers-in-law, after he had founded the four cities of Attica. His sons were Achæus and Ion.

XYLOGRAPHY (from ξυλον, wood, and γραφω, I write); a name sometimes given to wood engraving.

Y

Y; the twenty-fifth letter of the English alphabet, sometimes used as a vowel, sometimes as a consonant. It is a consonant at the beginning of words, in which cases it is produced by the emission of breath, whilst the root of the tongue is brought into contact with the hinder part of the palate, and nearly in the position into which the close *g* brings it, only a greater part of the tongue is pressed against the roof of the mouth. It has, in this case, the same sound with the German *j*, or the *g* in some parts of Germany. The letter *y* is derived from the Greek *υ*, which, however, had a different sound. The Germans have entirely rejected it, except in names of persons. A few persons of the old school continue it, and some use it still in the case of *seyn* (to be), to distinguish that word from *sein* (his); but these are very few, and the distinction is unnecessary, as the context will always show which word is meant. In Spanish, the custom of using *i* instead of *y*, where this letter is a vowel, is becoming more general; thus, *reyno*, *reynar*, are now giving way to *reino*, *reinar*. The Romans either retained the Greek *y* in nouns originally Greek, and betraying a Greek origin, as *physica*, *mythus*, *synodus*, *Harpyia*, *systema*, *Libya*, *myrrha*, *mysterium*; or changed it into a short *u*, or *o*, as in the case of δύο changed into *duo*, μῦς into *mus* (*musculus*), μύκων into *mugire*, μύλλω, μύλη, into *molo*, *mola*; or wrote it *i*, as in *inclitus*, and probably pronounced it like the Greek *υ*, or the French *u*, or the German *ü*. Y, as a numeral letter, signifies 150, or, according to Baronius, 159, as in the verse—

> Y *dat centenos et quinquaginta novenos.*

Y, on French coins, denotes the mint of Bourges. Y, in its Greek form (Υ), is also called the *Pythagorean* letter, because the Pythagoreans were said to signify by it the proceeding of the *duad* out of the *monad*, or the sacred *triad* (q. v.); according to others, *convalescence* (ὑγιεια), or the dividing road of life. It is also called the *Druid's foot.*—In geography, *Y* is the name of several Chinese towns; also of *Y*, or *Wye*, an arm or inlet of the Zuyder Zee, Netherlands, on the south shore of which Amsterdam is built.—We have known, in Germany, a person whose family name was *Y*, pronounced, as this letter always is in Germany, *ee*.

YACHT; a vessel of state usually employed to convey princes, ambassadors, or other great personages, from one kingdom to another. As the principal design of a yacht is to accommodate the passengers, it is usually fitted with a variety of convenient apartments, with suitable furniture. Private pleasure boats, when sufficiently large for a sea voyage, are also termed *yachts;* they are rigged in various manners.

YADKIN. See *Pedee.*

YAKOUTSK, OR JAKUTSK; a town in Siberia, capital of a province of the same name, situated on the Lena; lat. 62° 2′ N.; lon. 130° E.; population, about 7000. Yakoutsk lies in a plain, surrounded with mountains, and is the emporium of the northern fur trade, and an important entrepot of Russian and Chinese goods. Furs, corn, wine and salt are brought from Irkoutsk and Ilimsk by the Lena, and wines from Archangel. The cold is so excessive here in winter, that mercury freezes.

The province of *Yakoutsk* was formed in 1822, of a part of the government of Irkutsk. It borders on the Frozen ocean on the north, and the Chinese territories on the south, extending from 53° 15′ to 76° 15′ N. lat., and from 104° to 163° E. lon., and covering a superficial area of nearly 1,500,000 square miles, with a population of 140,000 souls. A great part of this extensive region is sterile and desolate. The inhabitants, who are chiefly Yakoutes and Tunguses, live principally by the chase, fishing, or the raising of reindeer, which animal they employ, like the Laplanders, in dragging their sledges, similar to that represented below. Far to the north, they dwindle into a poor and stunted race. Their vegetable food consists of various roots, a

onions, garlic, and berries. They are extremely superstitious. They reckon a number of evil spirits, with the dread of which they are perpetually haunted; and the influence of their magicians or priests over them is unbounded.

YAM (*dioscorea sativa*); a slender herbaceous vine, having large tuberous roots, which are much used for food in Africa and the East and West Indies. They are mealy, and esteemed to be easy of digestion, are palatable, and not inferior to any roots now in use, either for delicacy of flavour or nutriment. They are eaten either roasted or boiled, and the flour is also made into bread and puddings. The juice of the roots, when fresh, is acid, and excites an itching on the skin. There are many varieties of the roots; some spreading out like the fingers: others twisted like a serpent; others, again, very small, scarcely weighing more than a pound, with a whitish, ash-coloured bark, whereas the bark is usually black. The flesh of the yam is white or purplish, and viscid, but becomes farinaceous or mealy when cooked.

D. aculeata, by some considered only an improved variety of the preceding, is universally cultivated in the East and West Indies, in Africa, and in all the islands of the Pacific. The roots are frequently three feet long, and weigh thirty pounds. All the varieties are propagated like the potato, but they arrive much sooner at maturity. The buds of the roots are not apparent; but still a small piece of skin is left to each set; for from this piece of bark, alone, the shoots proceed. Holes are made in rows two feet apart, and eighteen inches distant in the row: into these holes two or three sets are put, first covered with earth, and then with a little haum or rubbish, to retain moisture. The only after-culture consists in hoeing up the weeds. They are commonly planted in August, and are ripe about the November or December following. When dug up, the greatest care is taken not to wound them, as that occasions them to sprout much earlier than they would otherwise. An acre of ground has been known to produce from twenty to thirty thousand pounds weight. The species of *dioscorea* are all vines, bearing, usually, heart-shaped and strongly-nerved leaves, and inconspicuous flowers.

YANG-TSE-KIAN, OR KIAN-KU; a river of Asia, which rises in the mountains of Thibet, and, after crossing the empire of China, from west to east, with a course of about 2400 miles, passing by the great city of Nanking, empties itself into the sea, 120 east of Nanking. It is the largest river in China, and reputed the largest in Asia. It changes its name in almost every province through which it passes.

YANINA. See *Joannina.*

YANKEE, as Heckewelder says, is probably a corrupt Indian pronunciation of the word *English*, whom the Indians called *Yengeese*. They distinguished them from the Virginians, or Southern people, whom they called *Long Knives*.

Yankee-Doodle. In the early part of 1755, great exertions were made by the British ministry for the reduction of the French power in the Canadas. General Amherst was appointed to the command of the British army in the North Western America; and the British colonies in America were called upon for assistance, who contributed with alacrity their several quotas of men. The British army lay encamped, in the summer of 1755, on the eastern bank of the Hudson, a little south of the city of Albany. In the early part of June, the eastern troops began to pour in. Their march, their accoutrements, and the whole arrangement of their troops, furnished matter of amusement to the wits of the British army. The music played the airs of two centuries old. A physician of the British army, by the name of doctor Shackburg, to please brother Jonathan, composed a tune, and recommended it to the officers as a celebrated air. The joke took, and in a few days nothing was heard in the provincial camp but the air of *Yankee Doodle*. The tune has since been adopted as the national air of the United States—a distinction to which its intrinsic merits certainly do not entitle it, being, as a piece of music, the merest doggrel. When contrasted, as it often is at sea, with the national air of "Rule, Britannia," the original meanness of "Yankee Doodle" becomes strikingly apparent.

YARD; a long piece of timber suspended upon the mast of a vessel to extend the sail of the wind. See *Ship*.

Yard-arm is that half of the yard that is on either side of the mast when the yard lies athwart the ship.

Yard-arm and Yard-arm; a phrase applied to two ships when they are so near that their yard-arms nearly touch each other.

YARD MEASURE. See *Measures*.

YARKAND, OR YARCUND. See *Bucharia, Little*.

YARMOUTH, OR GREAT YARMOUTH; a borough town of England, in the county of Norfolk, 22 miles east by south of Norwich, and 124 north-east of London. It is in the form of an oblong quadrangle, having the sea on the east, and on the west the Yare, over which there is a bridge. It contains four principal streets, running parallel, which are crossed, at right angles, by 156 narrower ones, denominated *rows*, and is flanked by a wall on the east, north and south sides. The quay of Yarmouth is considered equal to that of Marseilles, and has no superior in Europe, except that at Seville, in Spain. Its length is one mile and 270 yards: in many places it is 150 yards broad; and part of the line is decorated with handsome buildings. Yarmouth has long been much frequented as a fashionable watering-place, and furnishes every accommodation for the health, comfort and amusement of its visitors. It has a theatre, fisherman's hospital, hospital school, town-house, &c. The harbour was executed under the direction of Joas Johnson, a Dutchman, who was brought from Holland to conduct the work. The extent of the haven, between the north and south piers, is 1111 yards. During the late wars, the importance of Yarmouth was greatly increased, owing to its being a grand station for part of the British navy; the roads opposite the town affording safe anchorage for a numerous fleet. The harbour is perfectly secure against every danger, but the coast is the most dangerous in Britain, and has been often the scene of the most melancholy shipwrecks. This place is advantageously situated for commerce, particularly to the north of Europe. Yarmouth is actively engaged in the herring fishery, and has a considerable coal trade. It is defended by three forts, which were erected on the verge of the beach, during the American war, and mounted with thirty-two pounders. An armoury has been erected under the direction of Mr Wyatt. It returns two members to parliament, chosen by the burgesses at large. Population, in 1831, 21,115.

YARMOUTH, OR SOUTH YARMOUTH, a

seaport and borough in the Isle of Wight, situated at the eastern point of the mouth of the river Yar, from which the name is derived, and directly opposite to the town of Lymington, with which there is a constant communication. The town consists of several well-built streets, the houses having a very neat appearance, from being constructed with freestone. The market-house, a plain substantial building, has an upper apartment, appropriated for the uses of the corporation and all public business; baths, with every convenience, have recently been established. Yarmouth has several times suffered severely by the attacks of the French; and in the reign of Richard II. they entirely destroyed it by fire, having first pillaged it. The trade of this place is not extensive, the chief article of exportation being a fine white sand obtained here, used in making glass and earthenware; the imports, coals and timber. It formerly sent two members to parliament, but was disfranchised in 1832. Population, in 1831, 586.

YARROW, or MILFOIL (*Achillea millefolium*); a weed, distinguished by the excessively dissected leaves; hence the name, which signifies *a thousand leaves*. The flowers are small, white, and disposed in a terminal corymb. The whole plant has a strong and disagreeable odour.

YARROW; a celebrated pastoral stream of Scotland, in Selkirkshire, which rises at a place called *Yarrow Cleugh*, and, running east a few miles, forms a beautiful lake, called the *loch of the Lows*, which discharges its waters into St Mary's loch. Issuing from the latter, the river, after a course of about sixteen miles through the ancient district of Ettrick forest, joins its waters to those of the Ettrick, two miles above Selkirk. Near Newark castle, it forms highly romantic and picturesque scenery.

The *parish* of Yarrow is eighteen miles in length, and sixteen at its greatest breadth. It is estimated to contain 60,000 acres, and, by the census of 1831, had a population of 1221 inhabitants. Of this extensive district the ancient parish of Duchoire forms the eastern portion, that of Kirkhope the south-eastern, and that of St Mary (annexed at the reformation) the western. The surface is mountainous, but interspersed with fertile valleys, which, with some of the declivities, are cultivated, though the prevailing employment of the inhabitants is in rearing sheep, of which there are usually from 50,000 to 60,000 upon the hills. The view on every side is broken by lofty mountains, and of these the range termed the Black-house Heights, rises in considerable grandeur to an elevation of 2370 feet above the level of the sea; whilst the windings of the Ettrick and the Yarrow, contribute to enhance the romantic beauty of the scenery. Though now quite destitute of natural wood, this district still retains the ancient appellation of Ettrick Forest, the remains of which, principally oak, lie hidden in the mosses; there are, however, at Hanging Shaw, a venerable but ruinous seat of the Murrays, as well as upon several farms, some flourishing and very extensive plantations. The present church was erected in 1640, on a more central situation than St Mary's, the ancient parish church, but the old cemetery of the latter is still used. Vestiges of numerous feudal castles and mansions are discernable; and on the summit of Kersope Hill stood a monument, termed Tait's Cross, but the purpose for which it was erected is unknown. It is recorded that on and near its site, in 1722, were seen at one view more than 12,000 ewes folded and milked. Between Yarrow-kirk and St Mary's loch, stands Mount Benger, the residence of the late James Hogg, whose poetical genius has thrown an additional charm over a district already celebrated in song. Some of the finest verses he ever wrote were composed on the ancient cemetery of St Mary's kirk. We are tempted to extract a few.

O lone St Mary of the waves,
  In ruin lies thine ancient aisle,
While o'er thy green and lowly graves
  The moorcocks bay, and plovers wail;
  But mountain spirits on the gale
Oft o'er thee sound the requiem dread,
  And warrior shades, and spectres pale,
Still linger by the quiet dead.

Yes, many a chief of ancient days
  Sleeps in thy cold and hallow'd soil,
Hearts that would thread the forest maze,
  Alike for spousal or for spoil,
  That wist not, ween'd not, to recoil
Before the might of mortal foe,
  But thirsted for the Border broil,
The shout, the clang, the overthrow!

Here lie those who, o'er flood and field,
  Were hunted as the osprey's brood,
Who braved the power of man, and seal'd
  Their testimonies with their blood:
  But long as waves that wilder'd flood,
Their sacred memory shall be dear,
  And all the virtuous and the good
O'er their low graves shall drop the tear.

Here sleeps the last of all the race
  Of these old heroes of the hill,
Stern as the storm in heart and face;
  Gainsaid in faith or principle,
  Then would the fire of heaven fill
The orbit of his faded eye:
  Yet all within was kindness still,
Benevolence and simplicity.

Here lie old Border bowmen good;
  Ranger and stalker sleep together,
Who for the red-deer's stately brood
  Watch'd, in despite of want and weather,
  Beneath the hoary hills of heather:
Even Scotts, and Kerrs, and Pringles, blended
  In peaceful slumbers, rest together,
Whose fathers there to death contended.

Here lie the peaceful, simple race,
  The first old tenants of the wild,
Who stored the mountains of the chase
  With flocks and herds—whose manners mild
  Changed the baronial castles, piled
In every glen, into the cot,
  And the rude mountaineer beguiled,
Indignant, to his peaceful lot.

Here rural beauty low reposes,
  The blushing cheek and beaming eye,
The dimpling smile, the lip of roses,
  Attractors of the burning sigh,
  And love's delicious pangs, that lie
Enswathed in pleasure's mellow mine:
  Maid, lover, parent, low and high,
Are mingled in thy lonely shrine.

Dryhope castle, a ruin near the eastern extremity of St Mary's loch, was the residence of Mary Scott, the flower o' Yarrow, renowned in song, and who having been married to Elliot of Minto, became the ancestress of the lady who wrote "the Flowers of the Forest." It is singular, indeed, the number of poetical associations with which the district is connected. "The Song of the Outlaw Murray," the "Douglas Tragedie," and the eldest verses to the "Yellow-haired laddie," all belong to these scenes. But the best known of the ancient ballads is "The Dowie Dens of Yarrow," which is supposed to have suggested to Hamilton of Bangour the more modern song beginning, "Busk ye, busk ye, my bonnie bride." Hence, also, the plaintive strain of Logan, "Thy braes were bonny, Yarrow stream," &c., and Wordsworth's fine effusions, "Yarrow Unvisited," "Yarrow Visited," and "Yarrow Revisited."

YAWL. See *Boat*.

YAWNING, OR GAPING; an involuntary opening of the mouth, generally produced by weariness or an inclination to sleep, sometimes by hunger, sympathy, &c. It often precedes the fit in some intermittent fevers, and, in some instances, by the frequency of its recurrence, becomes a real disease. It is supposed to be determined by an interruption of the pulmonary circulation. Yawning, according to Boerhaave, is performed by expanding at one and the same time all the muscles capable of spontaneous motion, by extending the lungs, by drawing in, gradually and slowly, a large quantity of air, and gradually and slowly expiring it after it has been retained for some time, and then restoring the muscles to their natural state. Hence the effect of yawning is to move, accelerate, and equally distribute all the humours through all the vessels of the body, and, consequently, to qualify the muscles and organs of sensation for their various functions. When yawning is troublesome, long, deep respiration, or drawing in the air at long intervals, relieves it.

YAZOO; a river of Mississippi, which rises in lat. 35° N., near the borders of Tennessee, and runs south-south-west into the Mississippi, which it meets twelve miles above Walnut hills, 142 miles above Natchez. It is 230 miles long, and navigable 100 miles.

YAZOO LANDS. See *Georgia*.

YEAR; the period in which the revolution of the earth round the sun, and the accompanying changes in the order of nature, are completed. In ancient times, when it was thought that the sun moved round the earth, this period was called the *solar* year. The accurate determination of the solar year, which required great knowledge of astronomy and exact observations, could only be reached by the successive efforts of many generations. According to Herodotus, the Egyptians were the first who approximated to the true length of the solar year. They divided it into twelve months, and each month into thirty days, so that their year consisted of 360 days; and the inhabitants of Thebes, who did not take into consideration the course of the moon, added five days. They afterwards remarked that the dog-star (Sirius), whose appearance just before sunrise denoted the overflowing of the Nile, became visible one day later every four years; but the year of 365 days was so intimately connected with their festivals, that a change could not be made without the greatest difficulty; and, although the festivals occurred later and later, yet the mode of reckoning remained the same until the Romans became masters of Egypt, when the calendar of Julius Cæsar was introduced. In Greece, the year was more correctly divided into 365¼ days; and the Grecian astronomer Sosigenes made this the basis of the Julian calendar. (See *Calendar*.) But the astronomer Hipparchus of Alexandria, about 150 years before Christ, found, by observation, that the solar year contained only 365*d*. 5*h*. 55'. His improvements, however, were not adopted. Later observations have shown that the true year is about 11' 15" shorter than the Julian year. Lalande made it 365*d*. 5*h*. 48' 35" 30'''; Zach, 365*d*. 5*h*. 48' 48·016". This period, so accurately determined, is called the *astronomical* year, from which the civil year of the calendar must necessarily differ. As the civil year cannot divide the days, it only reckons 365 in the year, and therefore does not fully agree with the astronomical. On account of the remaining 5*h*. 48", &c., every four years a day is added to the month of February; and the year which thus consists of 366 days is called *leap* year. By the *lunar* year is meant the time required for twelve revolutions of the moon, which is, according to Lalande, 354*d*. 8*h*. 48' 37", making the lunar year 10*d*. 21*h*. shorter than the solar. Many nations of antiquity reckoned by the lunar year. A year is said to be *fixed*, if the equinoxes and seasons come on fixed days; but if they advance, the year is called *changeable*. Thus the Julian year is changeable; the Gregorian fixed. It is necessary to observe the difference between the tropical, sidereal and anomalistic year. The astronomical year is also called *tropical*, because its duration depends on the return of the sun to the equinoxes or the tropics. This differs from the sidereal year (the time required by the sun to complete a revolution with regard to a particular star), which is longer by 20' 5.7"; and the anomalistic year is 26' longer than the tropical, and is the time required by the sun to complete a revolution with regard to its apogee. The year of the Jews consisted of twelve months, which were divided alternately into twenty-nine and thirty days. A whole month was inserted in their leap year, between the sixth and seventh month. Their new-year's day was the day of the first new moon after the autumnal equinox. In the period of nineteen years, by which they reckoned, they had seven leap years, namely, the third, sixth, eighth, eleventh, fourteenth, seventeenth, and nineteenth. Among the Persians, the sultan Gelal (A. D. 1079), introduced a year which more nearly agrees with the astronomical than the Gregorian year does. According to his arrangement, a leap year occurs once in four years seventimes in succession; the eighth leap year, however, does not take place till after a lapse of five years. During the time of the French republic, a year was invented also more exact than the Gregorian. A period of 86,400 years requires 20,929 leap years; therefore a day was to be inserted at the end of the year as often as the autumnal equinox would fall on the second day of the new year. For further information, see *Calendar*.

YEAST is the barm or froth which rises in beer and other malt liquors during a state of fermentation. When thrown up by a quantity of malt or vinous liquid, it may be preserved to be put into another at a future period, on which it will exert a similar fermentative action. Yeast is likewise used in the making of bread, which, without such an addition, would be heavy and unwholesome.

YEDDO. See *Jaddo*.

YELL; one of the Shetland islands, the next largest of the group to Mainland, from which it is separated by Yell Sound, as it is from Unst by the strait of Blommel, and from Fetlar by Colgrave Sound. It is about twenty miles in length, and from six to twelve in breadth, exhibiting a tolerably level surface, but a bold and rugged coast, indented by many bays or voes, of which Bura, Hamma, Refirth, and Whalfirth are the principal, and form secure harbours. There are a few small patches of arable land near the shore, but the interior affords only a coarse pasturage for sheep and cattle, and a plentiful supply of peats, in procuring which large trees are frequently discovered in the mosses, though scarcely a shrub is now to be seen upon the surface. The island was formerly divided into three parishes, North Yell, now in union with the isle and parish of Fetlar, South Yell, and Mid Yell, which are also united. There are two churches.

The inhabitants are principally employed in the fisheries; those who work in the fields use a kind of spade instead of a plough, and as the men dig, their wives and children drag the harrows. Population of North Yell and Fetlar, in 1831, 1680; of South and Mid Yell, 1812.

YELLOW BIRD, OR AMERICAN GOLDFINCH (*fringilla tristis*, L.), is not less than five inches in length; of a rich lemon-yellow; the crown, wings, and tail black; bills and legs pale reddish yellow; tail handsomely forked. The female and young are of a brown olive colour; beneath, yellowish-white. In September, the dress of the male becomes nearly similar to that of the female. This common, active and gregarious goldfinch is a very general inhabitant of the United States. In summer, it is also to be met with in Canada, as far north as lake Winnipec, in lat. 49°. It is also met with in Mexico, and even Guiana and Surinam. Its migrations are very desultory, and probably do not proceed very far, its progress being apparently governed principally by the scarcity or abundance of food. As the fine weather of spring approaches, the males put off their humble winter dress, and now appearing in their temporary golden livery, are heard tuning their lively songs as if in concert, several sitting on the same tree. In cages to which they soon become reconciled, their song is nearly as animated and sonorous as that of the canary. They raise sometimes two broods in the season. The nests are often built in tall young forest trees, or lofty bushes. See Nuttall's *Ornithology of the United States and of Canada.*

YELLOW, NAPLES. See *Naples Yellow.*

YELLOWSTONE, one of the largest branches of the Missouri river, rises from lake Eustis, in the Rocky mountains, near the source of Lewis's river, which flows into the Oregon. Lake Eustis is about lat. 43° 20′ N. The Yellowstone runs E.N.E. 1100 miles, and joins the Missouri 1880 miles from the Mississippi; lon. 104° W.; lat. 47° 50′ N. This river is nearly or quite as large as the other branch, which retains the name Missouri. The Big Horn, its great southern branch, and the Del Norte and Lewis's river, are all said to have their sources near the same spot, in about lat. 43°. Captain Clarke, the associate of captain Lewis, descended this river while returning from the Pacific ocean. During its whole course from the point at which he reached it to the Missouri, a distance which he computed at 837 miles, it is navigable for batteaux. Its navigation is impeded by only one ledge of rocks; and this may be passed without difficulty. The banks of the river are low, but not subject to be overflowed, except at a short distance below the mountains. The colour of the river is of a yellowish-brown, and its bed is chiefly composed of loose pebbles. The river flows with a velocity gradually diminishing in proportion to its distance from the mountains. The first part of its course, it moves four or five miles an hour; the latter part not more than two. In the upper part of its course, the country consists of high, waving plains, bordered by stony hills, partially supplied with pine; towards the Missouri, the country contains less timber, and spreads into extensive plains. Much of the land bordering on it is fertile. It abounds with beaver and otter, and along its banks are immense herds of elks, buffaloes and deer. The width of its bed, at its confluence with the Missouri, is 850 feet. When measured by Lewis and Clarke, the stream was 297 yards wide, and the deepest part of the channel was twelve feet. The river had then fallen to its summer level.

YELLOW FEVER. See *Fever.*

YELLOW WEED. See *Wold.*

YEMEN. See *Arabia.*

YENITE (*lievrite*) occurs in prismatic crystals, whose primary form is a right rhombic prism of about 111° 30′. Cleavage takes place parallel to the longer diagonal of this prism. Colour black, or greenish-black; lustre submetallic, brilliant, or dull; opaque; hardness nearly equal to feldspar; specific gravity 3·8 to 4·1. The crystals are sometimes terminated, at one or both extremities, by four-sided pyramids, and vary from one inch in diameter to acicular. They are often much interlaced.

It also occurs columnar and massive. On charcoal it fuses, before the blow-pipe, into a black, shining globule, attractable by the magnet. With borax it readily forms a dark and almost opaque glass. It consists of

Silex,	29·278
Lime,	13·779
Alumine.	0·614
Oxide of manganese,	1·587
Oxide of iron,	52·54
Water,	1·26

It is a rare mineral, having been found only, in good specimens, at Rio la Marina and cape Calamite, in Elba, where it occurs dispersed in crystals and rounded massive balls, in a thick bed of blackish-green augite. It has also been found in the United States, at Cumberland in Rhode Island.

YEOMEN OF THE GUARD; a sort of foot guards, who attend the royal palace. The Yeomen were uniformly required to be six feet high. They are in number one hundred on constant duty, and seventy off duty. The one half carry arquebuses, and the other partisans. Their attendance is confined to the sovereign's person, both at home and abroad. They are clad after the manner of king Henry VIII.

YEOVIL; a market town in Somersetshire, which derives its name from the river Yeo or Ivel, on the banks of which it is situated, 122 miles W.S.W. from London. This place was formerly famous for its woollen manufacture, which has been superseded by that of gloves, chiefly of the finer kinds for ladies, made here at one period in great quantities; but this manufacture has suffered recently, from the introduction into use of French gloves, or from other causes. From the surrounding country abundance of butter, cheese, corn, and other articles of produce are sent to the markets for sale; and much butter especially is purchased, to be transmitted to the metropolis, where it is known by the appellation of Dorset butter. Population in 1831, 5921.

YERMOLOFF. See *Jermoloff.*

YESD, OR YEZD, OR YEYD; a town in Persia, in Irak, on the borders of Segestan and Kerman, 190 miles east of Ispahan, 210 north-east of Schiras, lon. 56° E.; lat. 31° 57′ N. It contains according to Malte-Brun and Hassel, 4500 houses, according to the Edinburgh Gazetteer, 24,000 houses, of which 4000 are occupied by Guebres. It is situated on the borders of a sandy desert, contiguous to a range of lofty mountains. It is a great emporium of the trade between Hindoostan, Bukharia and Persia. The environs produce excellent pomegranates and grapes. The chief manufactures are silk stuffs and carpets. In 1396, this town was taken by Timur Bec, after a siege in which it was stated 30,000 persons died of famine.

YEW (*taxus baccata*); an ever-green tree, belonging to the family of the pines, which is common in many parts of the north of Europe. The foliage somewhat resembles that of the hemlock spruce, except that the leaves are larger; the fruit, however, is not a cone, but a small red berry, in the hollow part of the extremity of which a green seed appears. The yew was formerly extensively cultivated in Great Britain, and on account of its gloomy and funereal aspect, was usually planted in church-yards. The wood, which is peculiarly hard, smooth, and tough, was manufactured into bows; but, since the introduction of fire-arms, the tree is no longer planted except for ornament. In the formal style of gardening which was once prevalent, few trees were more the subject of admiration, from its bearing to be clipped, without injury, into almost any form. Yews were cut into the shape of men, quadrupeds, birds, ships, &c. The wood is hard, beautifully veined, and susceptible of a very high polish; hence it is valuable for veneering and other cabinet work, and is in frequent use. From its hardness and durability, it may be made into cogs for mill-wheels, axletrees, and flood-gates, which scarcely ever decay. The leaves are extremely poisonous, both to men and cattle.

A species of yew (*T. Canadensis*) is found in Canada and the extreme northern parts of the United States. It is a low, prostrate shrub, commonly called the *ground hemlock*, and, indeed, is not distinguished by many from that tree.

YEZDEGIRD, Era of. See *Epoch*.

YNCA. See *Inca*.

YONNE; a department of France, about seventy miles in length, and from thirty to forty in breadth. See *Department*.

YORK; an ancient city of England, the capital of Yorkshire, is situated in the East Riding, on the banks of the Ouse, 196 miles north-north-west from London. The Romans established a station or settlement here, which probably derived its name from the river on the banks of which it was placed, now the Ouse or Oose, but anciently the Oure or Oore, a sound which seems evidently to be present in Eb-*or*-acum, the Latinized form used by the Romans. The *orac* of Eboracum again is no doubt the origin of the modern York. The Roman emperors who visited this country for the most part took up their residence at York. Here the emperor Severus died in the year 211, after having made York his head-quarters during the three or four preceding years which he spent in the island. Three remarkable mounts, a little west from the city, still bear the name of the Hills of Severus: and many other remains that have been discovered in later ages attest the Roman domination. After the establishment of the Saxon Heptarchy, York became the capital of the kingdom of Northumberland. Although, on the arrival of the Normans, this district, like the rest of the kingdom, quietly submitted in the first instance to the invaders, it was the scene on which, soon afterwards, a struggle was made by a powerful confederacy of Saxon lords and their retainers to regain their independence. This insurrection, however, was soon crushed by the activity and energy of the conqueror, who, laying siege to York, starved it into a surrender in six months, and then, after his usual fashion, erected fortresses in the close neighbourhood of the town, to keep it for the future in awe. This was the origin of the present castle, situated at the southern extremity of the city, in the angle formed by the confluence of the two rivers. At a little distance is a ruin called Clifford's Tower, which was the keep of the old castle, and took its name from the Cliffords, whom William appointed the first governors of that stronghold. In early times parliaments were frequently held at York; and in 1299, Edward I. even removed the courts of law from London to this city, where they continued to sit for seven years.

The city of York stands in the midst of an extensive plain, the largest in Great Britain. Viewed from the immediate neighbourhood, the peculiarity which most strikes the eye is the ancient wall by which it is encompassed,—supposed to have been built by Edward I., about 1280, on the line of the old Roman fortification. This wall, which had fallen greatly into decay, never having recovered from the damage it sustained when the city was besieged by Sir Thomas Fairfax and General Lesley, in 1644, has been lately repaired, and a walk is now formed along the top of part of it, which is a favourite resort of the inhabitants.

The ancient gates of York are four in number, namely, Micklegate Bar to the south-west, over the entry from London; Walmgate Bar to the south-east, Monk Bar to the north-east, and Bootham Bar to the north-west, facing the great road from Scotland. All these structures are at least as old as the thirteenth century; and the inner arch of the Micklegate Bar, which is a portion of a circle, has been supposed to be of the Roman times. Besides the four principal gates, there were formerly also five posterns, or smaller and more private entrances; but two of them, the Skeldergate and Castlegate posterns, have, within these few years, been taken down.

The entire circuit of the walls of York is about three miles and three-quarters, being somewhat less than that of the walls of the city of London. The space within, however, is much less densely occupied by streets and houses than it is in London. The streets of York used formerly to be for the most part extremely narrow—many of the houses being built of wood, and, according to the common fashion of that style of architecture, often overhanging the road below with their upper stories. Many of these ancient edifices, however, have been taken down of late years, and the principal streets widened and otherwise improved.

Among the most important of the recent alterations and repairs which have taken place in York, are to be reckoned those connected with the two rivers on the banks of which it stands. The Foss has been changed from little better than a stagnant ditch, into a clear and ornamental stream; and the navigation of the Ouse, which had been long neglected, has also been greatly improved since the commencement of the present century. New bridges have likewise been thrown over both rivers; that over the Foss being a single arch, and that over the Ouse consisting of three elliptical arches, of which the centre one is seventy-five, and each of the others sixty-five feet in span. The old bridge which crossed the Foss, was erected about the beginning of the fifteenth century, that of the Ouse is supposed to have been built at the expense of the archbishop Walter Grey, about the year 1235. It consisted of five pointed arches, as it may be seen depicted in "Drake's Antiquities of the city of York." The centre arch was supposed to be the largest in Europe, with the exception of that of the Rialto, at Venice. A gravelled walk was some years ago formed for about a mile along the left bank of the river, immediately to the south of the bridge, which, being now shaded with lofty elms, and having become a fashionable promenade, is one of the greatest ornaments of the city.

The most prominent feature in York is its noble cathedral or minster, a description of which we shall give at the end of this article. Next to the Minster, York castle and Clifford's tower claim attention. The castle of York, now the county jail, stands at the distance of about 200 yards from the eastern bank of the Ouse, and close to the Foss, which being brought round it in a deep moat or ditch, renders it inaccessible, except from the city, on the north. Historical evidence sufficiently proves that before the Norman conquest, York had a castle, which Drake, in his "Eboracum," supposes to have been the Old Baile, on the opposite side of the Ouse. The castle on the present site, according to the opinion of the same author, was built by William the Conqueror, but probably on a Roman foundation. Having fallen to decay, it was repaired, or rebuilt, in the reign of Richard III. After it was no longer used as a fortress, it was converted into a county prison; but, having fallen into a ruinous state from age, it was taken down in the year 1701, and in its stead, a structure was erected which was long considered to form one of the best regulated and most commodious prisons in the kingdom. However, in 1826, new buildings were commenced under the direction of Mr Robinson, architect. The plan of the new portion of the prison is upon the radiated and panopticon system, the governor's house forming a centre from which all the prisons and airing courts diverge. The governor and turnkeys can pass unseen from the centre to any part of the prison, through secret passages in each of the buildings, connected with a corridor of inspection which surrounds and connects the whole. From these passages, too, every thing that passes within the prisons can be seen; and as the prisoners know this, they have a right to suppose that the governor's eye is always upon them.

The prison is fire-proof, the structure being entirely of stone; the walls are 5 feet thick below, and 3 feet above, and no timber is used in the floors, the stone extending from wall to wall. Each cell of the prison is covered with a single piece of stone 5 inches thick, and the cells are divided laterally by single stones 9 inches thick. The doors are of hammered iron, and three iron guards are placed in each aperture in the thickness of the wall. The boundary wall surrounding the new prison, the old debtor's prison, and the court-house is 35 feet in height above the ground, and it has towers at intervals to strengthen it. This wall is 1350 feet in length, and is, in itself, a specimen of very superior workmanship. Upon the whole, York castle may be considered the strongest prison in England, and it is certainly one of the most complete and efficient.

In all the alterations which have taken place, "Clifford's Tower," which stands within the walls, has been preserved with the most scrupulous care. A short distance within the gateway there is a high mound, thrown up with prodigious labour, and surrounded by a strong stone wall. It appears to be elevated at least ninety feet above the level of the Ouse, and thirty feet above the site of the castle or gaol, and the adjacent parts of the city. On the summit of this mount stands an ancient tower, called "Clifford's Tower;" and, according to tradition, one of that family was its first governor, after it had been built by the Conqueror for the purpose of overawing the city and country. The castle itself was found by Leland in a ruinous state in the time of Henry VIII. But on the commencement of the civil wars between Charles I. and the Parliament, it was completely repaired and fortified by order of the earl of Cumberland, the governor of York. On the top of the tower was made a platform, on which several pieces were mounted: a garrison was appointed for its defence, and colonel Sir Francis Cob was its governor during the siege of the city. After the surrender of York, in 1644, it was dismantled of its garrison, except this tower, of which Thomas Dickenson, the lord-mayor, a man strongly attached to the cause of the Parliament, was constituted governor. It continued in the hands of his successors, as governors, till 1683, when Sir John Reresby was appointed to that office by Charles II. In the following year, 1684, on the festival of St George, about 10 o'clock in the evening, the magazine took fire and blew up, and the tower was reduced to a shell, as it remains at this day. Whether this happened accidentally or by design was never ascertained.

The other principal public buildings of York, are the mansion house, an elegant structure, erected in 1725; the guildhall, which dates from the middle of the fifteenth century, and is one of the finest Gothic rooms in England, being ninety-six feet in length by forty-three in breadth and twenty-nine and a half in height; the council chamber, built in 1819; the assembly rooms, built in 1730; the theatre, first opened in 1769, and thoroughly repaired in 1822; the museum of the Yorkshire philosophical society, opened in Feb. 1830; together with the county lunatic asylum, the establishment of the same kind belonging to the Society of Friends called the Retreat, the county hospital, &c. The archbishop of York has no house in the city, the only residence attached to the see being the palace at Bishopsthorpe, which stands on the west bank of the Ouse, about three miles farther down the river.

The Ouse flows through the city of York, the principal part of which, however, stands on the left or east bank of the river, immediately above its junction with the smaller stream called the Foss. Vessels of ninety tons burden can still ascend the Ouse as far as York; but in former times that city used to be accounted one of the chief marts of foreign commerce in the kingdom. From the foundation, however, of the port of Hull by Edward I. towards the close of the thirteenth century, the trade and commercial importance of York began rapidly to decline. The manufactures of the city are not very considerable, consisting principally of linen cloth and gloves: there are also iron and brass founderies, tobacco pipe makers, flax-dressers, sacking and sailcloth manufacturers, rope and twine makers, mustard manufacturers, comb makers, white and red-lead manufacturers, and coach, lace, and fringe manufacturers. A great part of the trade arises from the demands of the local population; and great quantities of coal are brought hither by water. Large sales of cattle and horses take place once a-fortnight, and at the annual fairs, and a market for leather is held once a-month; corn, flax, and wool are also extensively sold, at several of the fairs. Population of the city in 1821, 20,787; in 1831, 25,359.

York Cathedral or *Minster*. York was made the see of a bishop under Paulinus, who converted the Northumbrians to Christianity in 627; but this prelate was obliged to abandon his station, in consequence of the wars with the Britons and Mercians, which proved fatal to his royal patron Edwin. The see, however, was ere long restored; and while it was held by the famous Wilfred, disputes for the dignity of primate of the whole kingdom, occasioned a quarrel with Theodore, archbishop of Canterbury, and Wilfred was deprived of his episcopal authority, which however, he afterwards recovered. The contest was continued by successive archbishops of York and Canterbury, but it was at length terminated in favour of the latter, who acquired the title of primate of All England, while the archbishop of York was permitted to assume the title of primate of England. This metropolitan is always lord high almoner to the king, and ranks above all dukes not of the royal family, and all the great officers of state except the lord chancellor. The archiepiscopal establishment is composed of the archbishop, the dean, and the subdean, four archdeacons, a chancellor, a precentor, a succentor, a registrar, four canons residentiary, twenty-four prebendaries, a chancellor of the diocese, and various inferior officers; all which, with the chancellorship of the diocese and registrary, are in the patronage of the archbishop. The prebends are likewise in the same patronage; and on a vacancy in the chapter, the dean appoints a residentiary from among the prebendaries of the cathedral. The cathedral church, a most magnificent structure, dedicated to St Peter, was erected principally in the thirteenth and fourteenth centuries. The building having been destroyed by fire in the reign of king Stephen, it was partly re-erected by archbishop Roger, about 1170; but the principal part of the existing structure was built in the reign of Edward I., the nave being begun at that period, and it was finished about 1330, by archbishop Melton, who also erected the west front and angular towers. Archbishop Thoresby rebuilt the choir. He commenced this great work in 1375; but it is not perfectly certain when it was finished, some parts of the choir exhibiting the arms of archbishops Scrope and Bowet, Thorseby's successors, the latter of whom succeeded to the see in 1405. Meanwhile, it had also been resolved to take down the central steeple erected by John le Romayne; and in its place the present lantern tower was begun to be built in 1370. The whole was probably finished and the Minster brought to the state in which we now see it, about 1410 or 1412.

From this account it appears that the successive parts of the building, in the order of their antiquity, are the south transept, the north transept, the nave, the central tower, and, lastly, the choir, proceeding from the west end to the east. Reviewed in this order, the cathedral of York forms a most interesting and instructive architectural study. It is perhaps the most perfect example to be any where found of the history and progress of the Gothic style during the period of not much less than two centuries, which its construction occupied. In this place we can only remark generally, that a continued and regular improvement in grace and lightness of form, and a [illegible] more lavish profusion of minute and elaborate ornament, will be found to form the leading characteristics of that progress in England, during the whole of the period in question.

York Minster, as may be understood from what has been already stated, is built in the form of a cross, the longer bar forming the choir and nave of the church, lying, as usual, east and west, and the shorter, called the transept, north and south. Over the centre of the building, supported on four massive pillars, rises a grand tower to the height of 213 feet from the floor. This is said to be only a portion of the altitude originally designed by the architect, who intended to surmount this stone erection by a steeple of wood covered with lead, had he not been deterred by a fear lest the foundation should prove insufficient to sustain so great a weight. Over the west end of the building are two other towers or steeples rising to the height of 196 feet. The whole length of the building, from east to west is 524½ feet, and that of the transept, from north to south, 222. The length of the choir is 157½ feet, and its breadth 46½; in addition to which the east end of the choir contains a chapel behind the altar dedicated to the Virgin, making an entire length of 222 feet. The length of the nave is 261 feet; its breadth (including the aisles), 109; and its height, 99. These measurements (with the exception of the height of the towers at the west end, which is not given in that work) are taken from the last edition of Dugdale's *Monasticon Anglicanum*, by Caley, Ellis, and Bandinel, in six vols. folio, London, 1830.

York Minster has not the advantage of standing upon a height; yet its enormous mass makes it a conspicuous object from a great distance, and nothing can be grander or more imposing than the aspect which its lofty buttresses and grey towers present as they are seen rising over the surrounding houses of the city, which look like the structures of a more pigmy generation beneath the gigantic and venerable pile. Excepting on the north side where an open space of considerable extent has been formed by clearing away the old archiepiscopal palace, it is every where closely encompassed by other buildings, several of which approach within a few yards of its walls. There is scarcely, therefore a spot from which any one of its fronts can be completely or satisfactorily seen; except from a distance, where, of course, only the upper parts of the building are visible. The formation of a large open square around the noble old edifice, so that the whole might be viewed as perfectly as the north side, would exhibit the gigantic pile in all its surpassing magnificence. For the present the grandeur of the Minster must be sought for principally in its interior. The effect of the whole prolonged and lofty extent, as seen on entering from the great west door, is perhaps as sublime as any ever produced by architecture. Under favourable circumstances, such as the rich illumination of a setting sun, the impressions of awe, and veneration, and we may add delight, produced upon the mind by the grandeur and beauty of this wonderful building, are perhaps superior in intensity to the effects of any other work of man's hands. We doubt whether the finest Grecian temple could ever so touch the hidden springs of enthusiasm in our nature. The choir is divided from the nave by a stone screen; but this ornamental partition is so low as not to intercept the view of the portion of the roof beyond, nor "the dim religious light" streaming from the magnificent "storied window" that fills the east end of the building. This screen and the great east window are two of the proudest ornaments of the cathedral. The former is a work in the very richest style of ornamental carving; and fortunately it is in almost perfect preservation. It is divided into compartments by fifteen niches, which contain the statues of the English kings from the Conqueror to Henry the VI., inclusive. The place of the last mentioned monarch used to be occupied by a figure of James I., which it is said was substituted for that of Henry, after the latter had been displaced in consequence of the disposition manifested by the people to pay it a sort of idolatrous reverence, in memory of the holy king. It seems to have been thought there was no danger of their falling into the same excess of observance towards James's effigy. James, however was not many years ago taken down from a situation where he was certainly out of place, and a new statue of Henry, carved by a York sculptor, put in the niche. The great east window is of the vast dimensions of 75 feet in height by 32 in breadth. It is formed of above 200 compartments of painted glass. According to Mr Britton, in his "Cathedral Antiquities," the figures are generally from two feet two to two feet four inches in height. The heads in particular are many of them drawn with exquisite beauty. The fabrication of this noble specimen of art was begun in 1405, by John Thornton, of Coventry, whose agreement was to complete it in three years, during which time he was to have a salary of four shillings a week, with 100 shillings additional per annum, and £10 more on finishing the work, if it should be done to the satisfaction of his employers.

Attached to the northern transept of the cathedral is the Chapter House, an octagonal building with a conical roof, the interior of which consists of one apartment of great magnificence. It is 63 feet in diameter and 67 feet 10 inches in height, the arched roof being supported without pillars. Around are aranged the stalls, forty-four in number, formed of the finest marble, and having their canopies sustained by slender columns. A window occupies each of the eight sides, except that in which is the entry from the transept.

York Minster contains a good many tombs, some of them of considerable beauty; but these we cannot here attempt to describe. Among the curiosities preserved in the vestry we can notice only the ancient chair, said to have been used at the coronation of some of the Saxon kings, and on which the archbishop is still on some occasions accustomed to seat himself, and the famous horn of Ulphus, one of the most curious relics of Saxon antiquity which have been preserved to our times. A learned dissertation respecting this horn, by Mr Samuel Gale, may be found in the first volume of the *Archæologia*. It was presented to the cathedral by Ulphus, a lord of Deira, whose drinking horn it probably had been, along with and in testimony and confirmation of a grant of certain lands, still said to be in possession of the Chapter, and known by the name of the *Terra Ulphi*. They lie a short distance to the east of the city. The horn which is in perfect preservation is of ivory, and among other sculpture on the outside is ornamented with figures of two griffins, a lion, a unicorn, and some dogs and trees, cut in bas-relief. Mr Gale is of opinion that it was probably presented by Ulphus soon after the death of king Canute, which took place A. D. 1036. The horn was carried away at the time of the Reformation; but long after it fell into the hands of the celebrated Thomas lord Fairfax, by whose son Henry it was restored to the cathedral in 1675.

York Minster, it will be recollected, was very nearly destroyed, on the 2d of February, 1829, by the act of an insane individual, Jonathan Martin who died lately under confinement. This person, having concealed himself in the choir after service the preceding evening, contrived to kindle a fire in that part of the building, which was not discovered till seven o'clock in the morning. By this time the wood work of the choir was every where in a blaze; but by great exertions, and especially by sawing through the beams of the roof, and allowing it to fall upon the flames below, the conflagration was in a few hours subdued. The damage done consisted in the entire destruction of the stalls of the choir, and of the 222 feet of roof by which that part of the building was covered. The organ over the screen was also destroyed, but the screen itself escaped uninjured. A public subscription was immediately commenced for the repair of a loss which was justly considered a national one, and the sum of £50,000 was collected within two months. The task of effecting the restoration was committed to Mr Smirke; and the work was admirably completed by 1833. The scrupulous care with which the restoration has been accomplished, so as to preserve every detail of the building, is highly creditable to the architect and his employers. The roof has been executed in teak, and the carved work of the choir in oak. With the exception that the choir looks cleaner and fresher than formerly, a person unacquainted with its destruction would be unable to perceive any change. The organ, one of the finest in Europe, was destroyed, and another is being erected in its place. Even in an unfinished state this appears to be a grand instrument; and will be calculated for those fine choral services, which are heard with more effect in York Minster, than in any other cathedral.

YORK (formerly called *Toronto*); the capital of Upper Canada, on the north-west side of lake Ontario; lon. 70° 20′ W.; lat. 43° 33′ N. The population is about 3000. It is handsomely built. The public buildings are a government-house, a house of assembly for the provincial parliament, a court-house, a jail, various buildings for public stores and houses of worship. About a mile from the town are the barracks for the troops usually stationed here, and other buildings properly appertaining to such an establishment. The harbour is nearly circular, formed by a very narrow peninsula which encloses a beautiful basin about one mile and a half in circuit, and capable of containing in security, a great number of vessels. The town is delightfully situated, the climate is mild, and the town and harbour are sheltered by high lands. In 1793 this town contained only a solitary Indian wigwam.

YORK; a short and navigable river of Virginia formed by the union of the Pamunky and Mattapony. It flows into the Chesapeake opposite cape Charles.

YORK, Frederic, duke of, second son of George III., was born at Buckingham house, in 1763. the following year he was elected prince-bishop of Osnabrück, in Hanover; in 1767, was invested with the insignia of the order of the Bath, and chosen a companion of the most noble order of the Garter in 1771. In the literary part ot his education, he was associated with his elder brother, to whom he always continued to be much attached; and the direction of the studies of the two princes was successively confided to doctor Markham, afterwards archbishop of York, assisted by doctor Jackson and to doctor Hurd, bishop of Lichfield. Prince F derick was destined for the military profession, and, in 17[illegible], having been appointed a brevet-colonel in the British service, he set off for the continent, and, after visiting Hanover, proceeded to Berlin, to study the tactics of his profession in the school of the great Frederic. During his absence, he was appointed colonel of the Coldstream guards, with the rank of lieutenant-general, and, in 1784, was created duke of York and Albany in Great Britain, and earl of Ulster in Ireland. In 1787, he took his seat in the house of peers, and in the debates on the regency, at the close of the following year, made his first speech in parliament. In 1789, a duel took place between the duke and colonel Lennox, afterwards duke of Richmond, who had required from his royal highness an explanation or retractation of an observation made by the latter. The duke not complying with the requisition, but expressing his willingness to waive the privileges of his rank, a meeting took place on Wimbledon common. The word being given to fire, colonel Lennox obeyed, and his ball grazed the hair of the duke, who fired his pistol in the air; and the affair terminated without any personal injury to the combatants. In 1791, the duke of York married the eldest daughter of Frederic William, king of Prussia. This union was the result of political arrangements; and, after a few years, a separation took place, arising from circumstances which did not imply any impropriety of conduct on the part of the duchess, whose death occurred in 1820. On his marriage, the duke of York received an augmentation of his income, which raised it to £35,000 a year, exclusive of the revenue of the bishopric of Osnabrück. In 1793, his royal highness was sent to Flanders at the head of a British army, to oppose the French. Valenciennes surrendered to the troops under his command, July 26; and, on the 22d of August, he sat down before Dunkirk, but was speedily obliged, by the French, to retire. In the campaign of 1794, Pichegru having taken the command of the French army, that of the duke, with his German allies, after experiencing various reverses, retreated into Westphalia; and in April, 1795, the remnant of the British army returned back to England. In February of the same year, the duke of York was appointed commander-in-chief. In 1799, he was again employed against the French in Holland; but the expedition terminated with a truce, one condition of which was the liberation of 8000 French and Dutch prisoners of war in England. This expedition terminated the services of the duke of York in the field, in the course of which he proved himself wholly unequal to his station. In 1809, colonel Wardle, in the house of commons, charged the duke with having suffered a female favourite, named Mary Anne Clarke, to influence him in the disposal of commissions in the army. The evidence brought forward showed that promotion had been extended to persons recommended by this woman, who made a traffic of such transactions; but as nothing occurred to implicate the duke of York directly in the corrupt transactions between Mrs Clarke and the persons to whom she sold her servants, he was acquitted by a majority of eighty-two, who voted against the proposed general inquiry into his official conduct as commander-in-chief. His royal highness, however, thought proper to resign his post, in which, about two years after, he was reinstated by the prince-regent, with little or no objection on the part of the public. This circumstance produced in the duke a redoubled attention to his duties. From that time he exercised the most rigid impartiality in the distribution of promotion, and the humblest petition was sure of attention; the rights and comforts of the soldier were studiously attended to; and, without relaxing necessary discipline, some of its more odious and dispensable rigours were discountenanced. Upon the whole, both in a moral and a social, as well as in a military sense, the British army owes much to the exertions of this prince, whose rank and influence enabled him to effect improvements which equally good intentions, without such advantages, might have failed to secure. Among the future circumstances of his public life was his appointment to the post of keeper for the person of his father, in 1818, to which post was annexed a salary of £10,000 per annum. The last speech of the duke of York, in parliament, was against Catholic emancipation, and amounted to this, that he would never consent to that measure, should he be called on to reign. Not long after this event, he was attacked with a dropsy in the chest, which after long and protracted suffering, ultimately proved fatal on the 5th of January, 1827.

YORK (HENRY STUART), CARDINAL OF. See *Stuart, Henry.*

YORK; count von Wartenburg, Prussian field-marshal, one of the most distinguished German generals in the wars against Napoleon. (See *Russian-German War.*) He fought in America on the side of the British during the war of the revolution, and here became acquainted with the operations of light troops, which he afterwards introduced, with improvements, into the Prussian army. He was made a colonel in 1806, and distinguished himself by skilful manœuvres during the disastrous state of the Prussian army after the battle of Jena. In 1808, when the Prussian army was reorganized, he was made major-general and inspector of all the light troops. In 1812, he was one of the officers of the Prussian auxiliary corps of 20,000 men, under general Grawert, which, with the Polish, Bavarian and Westphalian troops, formed the tenth corps under the command of Macdonald, and was destined to cover the left wing of the French army, and to operate against Riga. When general Grawert laid down the command, on account of his ill health, general York became commander of the Prussian corps. When Napoleon ordered the retreat of the tenth corps to the Memel, York commanded the third column, which left Mitau, Dec. 20, followed by the Russians, under general Wittgenstein and Paulucci, who entered Memel, while their van extended along the Memel. Thus the situation of general York was critical; but it was less for this reason than on account of the political situation of Europe, that he concluded the well-known convention of Dec. 30, 1812, according to which the Prussian corps separated from the French army, and assumed a neutral position.—See Seydlitz's *Journal of the Prussian Forces in the Campaign of* 1812 (Berlin, 1823, in German).—The king of Prussia was obliged to express disapprobation of this step; but the attitude which was soon assumed by the whole kingdom showed that it was in reality agreeable to the government. The step was bold, and entirely on the general's responsibility, and became a measure of great consequence. After his corps, which was much diminished in number, had been re-enforced in Prussia, general York led it to the Elbe, and obtained a victory at

Danigkow, April 5, 1813, over the army of the viceroy of Italy. General York was engaged in the battles of Lützen and Bautzen and distinguished himself on the day before the latter action, at Weissig, by an obstinate resistance to the forces under Sebastiani, five times more numerous than his own. After the armistice concluded in that memorable year, his troops formed the first corps of the Prussian army, and, being united with the Silesian army under Blücher, shared in the victory on the Katzbach, August 26. October 3, he gained a victory over Bertrand, near Wartenburg, in consequence of which the Silesian corps was enabled to cross over to the left bank of the Elbe. From this achievement he received the title count York von Wartenburg. In the battle of Leipsic, he defeated Marmont at Möckern, Oct. 16. He fought at Montmirail, Feb. 11, 1814. General Sacken had too hastily risked an engagement with Napoleon, which was likely to result in his destruction, when general York appeared, and enabled Sacken to escape, though with great loss. In the battle of Laon, March 9, he did great service, volunteering, with general Kleist, to conduct a nocturnal attack, which destroyed the corps of Marmont and Arrighi, and gave a decisive turn to the battle. After the peace, he received a considerable grant, and was made commanding general in Silesia and the grand-duchy of Posen. His son was wounded several times in the cavalry action near Versailles, July 1, 1815, and died a few days after—a circumstance which affected general York so much as to induce him to retire from service. May 5, 1821, he was made field-marshal-general. He died Oct. 4, 1830.

YORKE, PHILIP, first earl of Hardwicke, and lord high chancellor of England, was born in 1690, at Dover, in the county of Kent, where his father practised as an attorney, and brought up his son to the higher branch of his own profession. He was placed in the Middle Temple, and, being called to the bar in 1714, soon rose to great eminence as a counsel. In six years' time, the interest of lord chancellor Parker procured him the office of solicitor-general, in which capacity he displayed great professional knowledge and eloquence, as well as unbending integrity. Four years after, he was made attorney-general, and, on the resignation of lord King, in 1733, was made lord chief justice of the king's bench, with the barony of Hardwicke. On the decease of lord chancellor Talbot, in 1737, lord Hardwicke was elevated to the woolsack, and, during the long course of twenty years in which he presided in the equity courts, acquitted himself with so much ability, judgment and integrity, that only three of his decisions were ever called in question; and even all of these were, on appeal, confirmed by the upper house. In 1754, a patent was issued from the crown, advancing him to the rank of an earl; two years after which he resigned the seals, and retired from public life. Lord Hardwicke died in 1764. He was the author of a paper in the Spectator. His early professional work is an equity treatise, entitled the Legal Judicature in Chancery stated.

YORKINOS. See *Guerrero*.

YORKSHIRE; the largest county in England, is bounded on the north by Westmorland and Durham, on the east by the German ocean, on the south by the river Humber and the counties of Lincoln, Nottingham, Derby, and Chester; and on the west by Lancashire and Westmorland. From the latter counties it is chiefly separated by hills and moorlands, which have been termed the English Apennines, and its northern border has been formed throughout by the river Tees. Its extreme length from east to west is 96 miles, its utmost breadth from north to south, 86, and its circumference above 380. Yorkshire is divided into three districts, named, from their relative situations, the North, West, and East Ridings.

The North Riding includes all that part of the county extending from the shore of the German ocean to the border of Westmorland, and separated on the south from the East Riding by the rivers Hartford and Derwent, by the Ouse, from the Ainstey of York, and partly by the latter river and by the Ure from the West Riding, the remainder of the boundary-line being imaginary. The sea-coast of the Riding, from Scarborough nearly to the mouth of the Tees, is bold and rocky, the cliffs rising from sixty to 150 feet, and at Stoupe Brow, about seven miles south of Whitby, the height is not less than 890 feet. The surface generally rises rapidly, from the shore towards the interior, to about the height of [illegible] feet, at which level is a considerable extent of fertile soil. Further inland the hills become loftier till they reach the elevated tract called the Eastern Moorlands, which, however, are intersected by several fine and fertile vales. Near the borders of this district some of the heights command noble and extensive prospects, and here is the mountain called Roseberry Topping, a noted landmark, 1030 feet high. North-westward of these mountains is the vale of Cleveland, a fertile district, bounded on the north by the river Tees. Part of the extensive vale of York is comprised within the North Riding, lying between the Eastern and Western Moorlands. The latter are of much greater elevation and of a bolder character than the former, but intersected by a multitude of fertile vales, watered by numerous streams.

The West Riding, which is by much the largest of the three, includes all the southern part of the county eastward of the river Ouse, by which it is divided from the East Riding. It exhibits considerable diversity of surface, but consists principally of three districts. That part which is included within the vale of York is level and marshy, except in a few places where there are low sandhills. The more central parts of this Riding consist of gentle eminences, exhibiting much fine scenery. The western and north-western parts are rugged and mountainous, here being some of the loftiest mountains of South Britain, particularly Ingleborough and Wharnside. Interspersed among these heights are several picturesque and beautiful valleys, the most extensive of which are those of Wharfdale, Nidderdale, and the vale of the Aire. In the north-west part of the Riding is the district of Craven, where are several small lakes, one of which, called Malham Water, is situated on a lofty moor.

The East Riding, the landward borders of which have been already specified, is bounded on the east by the sea, and on the south by the Humber. This district is not only smaller than the two preceding, but its characteristic features are also less strongly marked. The central part of the Riding from north to south, called the Wolds, consists of a lofty range of chalk-hills, extending from the banks of the Humber, westward of Hull, to the vicinity of New Malton, on the Derwent, and thence eastward to the German Ocean, where they terminate in the lofty promontory of Flamborough Head. To south, along the coast, the surface in general is flat and marshy, and near Hornsea is a lake called Hornsea Mere. This tract terminates in the low narrow headland called Spurn Head, westward of which is Sunk Island, consisting of fertile meadowland, nearly 5000 acres in extent, which has been chiefly recovered from the sea since the beginning of the seventeenth century. The western part of this Riding, usually termed the Levels, is a fruitful tract, but the scenery is tame and uninteresting. The Ainstey of York, situated between the three Ridings, though comparatively inconsiderable in the point of size, may be regarded as constituting a fourth distinct division. It is situated at the junction of the three Ridings, and is divided from the North Riding by the rivers Nid and Ouse, from the East Riding by the latter river, and from the West Riding principally by the Wharfe. The Ainstey was anciently a forest, and in the character of its surface and scenery it corresponds with the other parts of the vale of York.

The rivers of this county are numerous. They in general rise in the mountainous borders of the county, on every side except towards the sea, and uniting as their streams flow toward the centre, like the veins of a spreading leaf, at length terminate in one main trunk, which opens into the estuary of the Humber. The most important of these rivers are the Northern Ouse, the Swale, the Ure, the Wharfe, the Derwent, the Aire, the Calder, the Don, or Dun, and the Rother; besides which the Tees skirts the northern border of the county, and the Ribble, which soon passes into Lancashire, has its source in the western mountains of this county. There are several small streams, which rise in the northern part of the county and fall into the Tees. Among those which empty themselves immediately into the sea is the Eske, which has its source in the eastern moorlands, and, passing eastward, enters the German ocean at Whitby.

With regard to the agriculture of Yorkshire, the soil of the North Riding is chiefly of brownish clay and loam, and the hills along the coast, abound with argillaceous schistus, or alum shale. In the district of Cleveland the soil is a fertile clay and fine red sand, and in the Ainstey of York its composition is variable, but it is generally fertile. Swaledale contains very rich land, while the eastern moorlands are covered with morasses, peat-bogs, or loose rocks. In the West Riding the soil varies in quality, from a deep strong clay, or loam, to barren peat-earth. In the Wolds of the East Riding are [illegible] acres of sheep-walks, the soil of which is a light gravelly loam; and near the borders of the Humber is found strong clay-loam, remarkable for its fertility. In the North Riding, a considerable part of the vale of York, and the district between it and the sea, is under tillage. That portion of the West Riding extending westward from the river Ouse to Leeds, Wakefield, and Rotherham, consists principally of arable land, but little of which is found in other parts of the Riding. In the East Riding most of the land in the Wolds is under tillage, and also about one-third of the land in Holderness and Howdenshire, but more in the former than in the latter. Wheat is raised in many parts in large quantities, the quality of which is good, especially in Cleveland; barley is largely cultivated in the Wolds; and in Ryedale, and other parts of the North Riding, big and bear are sometimes raised; rye is also cultivated on the lighter soils, sometimes, together with wheat. Oats form a general crop in the North and West Ridings, and in the latter this grain is frequently made into bread. Peas are chiefly raised in the North and East Ridings, and beans on the stronger soils. Swedish and other turnips are cultivated in various parts, and in the East Riding several kinds of cabbages are grown for feeding cattle. The culture of potatoes is general, and on the borders of the Ouse, and in Holderness, large quantities are raised for exportation to London. Rape is raised for seed in the North and West Ridings, flax in several parts, woad in the neighbourhood of Selby, mustard around York, and teasels in the wapentake of Barkstone Ash, in the West Riding. This county has long been noted for the excellence of its breed of horses, especially those of the North and East Ridings. The coach and saddle horses are generally sold at the fairs of Beverley, Malton, York, and Howden, and distributed to different parts of the kingdom, and often sent to the continent. The West Riding is famous for a breed of long-horned cattle, called the Craven breed; but in the northern part of the vale of York, and in Cleveland, the cattle are of the short-horned kind, called the Teeswater breed, known in the south of England under the appellation of Holderness cattle. Sheep kept here are of various kinds: on the Wolds those of the South-Down variety have been introduced; on the moors of the West Riding is a breed of sheep, supposed to be indigenous, called the Penistone breed; and great numbers of Scots sheep are fed in the low parts of the county.

The mineral productions of Yorkshire include coal, iron, and lead ores; alumstone, marble, limestone, and alabaster. In the West Riding is one of the most extensive coal-fields in the kingdom, extending westward from a line, stretching from north to south, between Ripon and Tickhill. The coal-mines are most numerous between the rivers Aire and Calder, and to the south about Barnsley and Sheffield. Ironstone is found in great quantities in the eastern moorlands, and some strata of this ore are worked in the vicinity of Whitby. At Grassington, in the West Riding, are considerable lead-mines, and there are others in Swaledale, Arkendale, and other parts of the western moorlands. Copper-ore has been found in the North Riding, at Richmond and at Middleton Tyas, where mines existed about the middle of the last century. The hills of Cleveland, and the rocks on the coast of the North Riding, consist largely of strata of aluminous slate, and near Whitby, alum-works have been long established. Marble occurs in the western mountains, some of which resembles in its veins and texture the Derbyshire marble; but it is used only for making lime, or other common purposes. Alabaster, or gypsum, is met with in the North Riding; and there are quarries from which it is procured near Thornton bridge, on the Swale; it is also found in the other Ridings. Near Knaresborough occurs a bed of Strontian earth; and about Whitby are found the fossils called cornua ammonis, with some other curious productions of a similar kind.

The manufactures of Yorkshire, especially those of the West Riding, are of great national importance. Woollen cloths and stuffs, of various descriptions, have long been manufactured in the extensive district around Halifax, Bradford, Leeds, Wakefield, and Huddersfield. This manufacture formerly was principally confined to the coarser kinds of cloth, but now broad cloths and kerseymeres are largely made; and, likewise, blankets, carpets, baizes, serges, shalloons, camlets, moreens, and other articles, in great variety. There are also large factories for making coarse linens and Manchester cotton goods. Sheffield, from an early period, has been noted for cutlery and hardware, besides which it has now iron and brass founderies. Among the other manufactures of Yorkshire may be mentioned pottery, bricks, and tiles, hair-cloth, tanned leather, ropes, and sail-cloth. Hull, in this county, is one of the most important of our seaports, and the county also contains the ports of Whitby, Scarborough, Bridlington, and Goole. The West Riding is intersected by several canals, for the convenience of commercial intercourse with other parts of the kingdom, and with the sea. Off the coast are found abundance of fish of various kinds, the taking of which furnishes employment for an industrious and hardy race of fishermen, inhabitants of sea-side villages, who often pursue their prey to great distances, and furnish extensive supplies of provisions for the country. Some of the ports, especially Hull and Whitby, share to a great extent in the Greenland fishery and the commerce of the Baltic.

Yorkshire contains the city of York, and the boroughs of Northallerton, Beverley, Boroughbridge, Aldborough, Hedon, Kingston-upon-Hull, Knaresborough, New Malton, Pontefract, Richmond, Ripon, Scarborough, and Thirsk. The market-towns in Yorkshire are Abberford, Askrigg, Barnsley, Bawtry, Bedale, Bingley, Bradford, Bridlington, Dewsbury, Doncaster (formerly a borough), Great Driffield, Easingwold, Gisburn, Goole, Guisborough, Halifax, Harewood, Hawes, Helmsley, Howden, Huddersfield, Keighley, Kirkby Moorside, Leeds, Leyburn, Masham, Otley, Pateley Bridge, Patrington, Penistone, Pickering, Pocklington, Reeth, Ripley, Rotherham, Sedbergh, Selby, Settle, Sheffield, Sherburn, Skipton, Snaith, South Cave, Stokesley, Tadcaster, Thorne, Wakefield, Market Weighton, Wetherby, Whitby, and Yarm; besides which may be mentioned, Cawood, Cottingham, Hornsea, Middleham, and Tickhill, the markets of which are discontinued or inconsiderable. The whole of this county is within the diocese of York, except a part of the North Riding, which belongs to that of Chester. It consists of three archdeaconries in the former diocese, namely, that of York or the West Riding, that of the East Riding, and that of Cleveland; that part of the county which belongs to Chester is in the archdeaconry of Richmond. Population of the county in 1801, 887,000; in 1811, 1,019,200; in 1821, 1,173,187; in 1831, 1,371,296.

YORKTOWN; a post-town, port of entry, and capital of York county, Virginia, on the south side of York river, twenty-nine miles north-west of Norfolk. York river affords, at this town, the best harbour in Virginia; but it has not become a place of large population or extensive trade. Yorktown is famous for the capture of lord Cornwallis and his army by the Americans under general Washington, October 19, 1781. The whole number of the prisoners amounted to 7107. This was the last considerable battle in the revolutionary war, and was the immediate cause of the conclusion of the American contest for independence.

YOUGHAL; a town of Ireland, in the county of Cork, situated on the estuary of the Black-water, 154 miles south-west from Dublin. The harbour is deep within, but obstructed at the entrance by a bar, denying admission to large ships, which, together with the great superiority of Cork harbour, reduce the traffic of this port to a mere coasting trade. Large quantities of grain are shipped here, at a very inconvenient quay, and Cork is supplied with good building-bricks from this vicinity. The convenience of its situation for bathing, and the agreeable character of the strand, have rendered this a place of fashionable resort in the summer-season. Population of the town between 8 and 10,000.

YOUNG, ARTHUR, a distinguished agricultural writer, was the son of Arthur Young, a prebendary of Canterbury, and born in 1741. He served his apprenticeship to a wine merchant; but on entering into the possession of his paternal estate, near Bury St Edmunds, he became a farmer, and impoverished himself by experiments. After several unsuccessful attempts to conduct a farm, he determined to examine the mode of cultivation pursued in different parts of England. In 1770, he published the Farmer's Calendar, containing the Business necessary to be performed on the various Kinds of Farms during every Month in the Year (8th ed., 4 vols., 8vo., 1812), and, in 1784, began the publication of his Annals of Agriculture (40th vol., in 1804)—a work which had the most important influence upon the art of agriculture in England, and of which a considerable portion was translated into French, under the auspices of the government. In 1789, he was appointed secretary of the newly erected board of agriculture, with a salary of £600 a-year. Young not only visited and examined, with great attention, the different counties of England and Ireland, but also made several tours on the continent, for the purpose of becoming acquainted with the agricultural processes in different countries. He became blind some years before his death, which happened on the 20th Feb., 1820. Of his numerous works, we can mention only the principal:—Farmer's Letters to the people of England (1767), second volume under the title of Letters to the Landlords of Great Britain (1771); a Six Weeks' Tour through the Southern Counties (1768, 2d ed., enlarged, 1769); a Six Months' Tour through the North of England (1770, 4 vols.); the Farmer's Tour through the East of England (4 vols., 1770); Tour in Ireland (2 vols., 1780); Travels in France, Spain, and Italy, 1787—9 (1791, 2 vols. 4to.); Travels during the Years 1787—1789 (1792); Rural Economy (1772); and Farmer's Guide (1770, 2 vols,, 8vo.).

YOUNG, EDWARD, a distinguished English poet of the last century, was born at his father's [illegible] of Upham, in Hampshire, in 1681, or, according some, two years earlier. He was educated at Winchester school, and obtained a New college fellowship, which he resigned in 1708, for another at All Souls, in the same university. Although originally designed for the law, which induced him to graduate in that faculty, the predominant bias of his mind towards a religious life at length induced him to take orders. His poems on the Last Day, and the Force of Religion, printed in 1713, strongly manifest this prevailing feeling. At one time he aspired to the representation of the burgh of Cirencester in parliament; but, failing in this undertaking, he soon after entered the church, and obtained the living of Welwyn, Hertfordshire, with a king's chaplaincy. In 1741, the death of his wife, to whom he was much attached, appears to have much creased the melancholy of a mind originally of sombre complexion; and to this event may be cribed the production of his principal poem, Complaint, or Night Thoughts, by which he title it is more generally designated. Besides this poem, doctor Young was the author of three tragedies, Busiris, the Brothers, and the Revenge. Seven satires, under the title of Love of Fame, the Universal Passion, with a poem entitled Resignation, written in 1759, conclude his poetical labours. As a prose writer, he is chiefly known by his Centaur not Fabulous, levelled against the prevailing manners of the time: and a treatise entitled Conjectures on original Composition, written at the age of eighty. Doctor Young, in his retirement at Welwyn, maintained the situation of a man of easy fortune. His latter years were, however, subject to much discontent; he had taken deep offence at the youthful irregularities of his son, and he fell under the sway of a housekeeper, by whom he was entirely governed. On his death-bed, he declined an interview with the former, but sent him his forgiveness, and made him his heir. His death took place in April, 1765, in his eighty-fourth year. The fame of Dr Young rests altogether on his poetry, comprising his satires, tragedies and Night Thoughts. The first are built on the supposition of fame being the universal passion of mankind. They abound more in flashes of wit and caricature than in grave exposures of vice and folly; but they are lively and epigrammatic. As a dramatic writer, with much poetic conception and strong feeling, he is exaggerated and bombastic. The Revenge however, keeps the stage; and its hero, Zanga, stands pre-eminent for theatric interest among the personages of modern tragedy. The Night Thoughts, on which the fame of Young for originality is exclusively founded, although occasionally tumid and extravagant, exhibit great force of language, and occasional sublimity of imagination. They are even more popular in France and Germany, than at home, and have passed through a great number of editions. An edition of his entire works, in four volumes, octavo, was published by himself. See his *Life*, by Herbert Croft, in Johnson's Lives of the Poets.

YOUNG, THOMAS, M. D., a distinguished scholar born in June, 1773, was educated partly at Göttingen and partly at Edinburgh. Having taken his degrees at the latter place, he went to London, and was sometime lecturer at the royal institution. He was subsequently appointed physician to St George's hospital, and, in 1794, was elected a fellow of the royal society. Doctor Young was equally eminent in science and in letters. He was particularly distinguished for his great knowledge of the practical application of science to the useful arts and the business of life; and his opinion was often called for by government, when these and kindred subjects were made matters of legislation. In this department, besides a great number of papers in the Transactions of the Royal Society, and Nicholson's Journal, and a variety of articles in the Quarterly Review, and the Supplement to the *Encyclopædia Britannica*, some of which were, however, on literary subjects, Doctor Young left behind him a Syllabus of a Course of Lectures on Natural and Experimental Philosophy (8vo., 1802), which contains the first publication of the general law of the interference of light; a Course of Lectures on Natural Philosophy and the Mechanical Arts (2 vols., 4to, 1807); Elementary Illustration of the Celestial Mechanics of Laplace (8vo., 1821), &c. He [illegible] edited the Nautical Almanac from the year [illegible] to 1829. His productions in the department of philology and criticism were also numerous, which are principally to be found in the Imperial Review, the London Quarterly Review, and the Archæologia. In the eighteenth volume of the latter work appeared his remarks on Egyptian papyri, and the Rosetta inscription, containing an attempt to interpret the Egyptian part of the inscription. In the article *Egypt*, for the supplement to the Encyclopædia, he treated the whole subject of Egyptian mythology, early history, and hieroglyphics with great learning; but we have already given our reasons, in the article *Hieroglyphics*, for denying him the honour claimed for him by his countrymen, of having discovered and explained the phonetic system, which the late ingenious and learned Champollion so ably developed. The discoveries of Champollion were followed by two additional works of doctor Young on the subject, under the titles, an Account of some recent Discoveries in Hieroglyphical Literature and Egyptian Antiquities (8vo., 1823), and Hieroglyphics collected by the Egyptian Society (folio. 1823). Doctor Young died in 1829.

YPRES, OR YPERN; a city of Belgium, in West Flanders, capital of a district, on the river Y-perlee, from whence it takes its name; twenty miles south of Ostend, sixteen north-west of Lisle, lon. 2° 53′ east; lat. 50° 51′ north; population, 15,291. It is connected by a canal with Bruges, Ostend, and Nieuport, is fortified, and tolerably well built. The principal public buildings are a very large Gothic town-house, an elegant cathedral, an exchange, a chamber of commerce, and a college. The city of Ypres is more interesting on account of what it formerly was than for what it now is. It still contains some manufactures of cloth, serges, ribands, and thread; but at one time its inhabitants appear to have formed the greatest manufacturing community in the world. A census of the population, taken in 1342, made it amount to above 200,000 souls. Soon after this, however, its decline began. In a French edition of Ludovico Guicciardini's "Description of the Low Countries," published at Antwerp, in 1609, it is remarked, that whensoever, and in what quantity soever the rain of adversity had in former days fallen upon Ghent and Bruges, Ypres had always received some drops of it; and that this city, indeed, being the weakest of the three, had often been severely punished, and obliged to pay the forfeit for misdeeds which the other two had committed. All these towns suffered both by the attacks of foreign enemies and by their own internal dissensions. The middle of the fourteenth century was in the Netherlands, as in France and in England, the age of political convulsion—of the first considerable efforts, since the establishment of feudal institutions, made by the body of the people to throw off the oppressive yoke under which they were everywhere kept down. Some contemporary writers attribute these tumults of the commonalty to the improvement which had now taken place in their condition, as compared with that of their forefathers; and there can be no doubt that there is much truth in this representation. As long as the condition of the people was one of almost brutal destitution and misery, they submitted to be treated like the inferior animals; but as they gradually outgrew this absolute penury and helplessness, they became more indisposed to endure the oppression to which they were subjected, and began first to murmur against it, and then attempt to throw it off. The attempt, as was to be expected, was not skilfully directed in the first instance, and was productive of no immediate good effects; but it prepared the way for future and more successful struggles. It served at least as an example, and, that once given, the rest followed of course.

For this leading step in the onward march of civilization, we are mainly indebted to the citizens of Ypres and other Flemish towns. The cloth weavers of these towns were the first commonalty in Europe that became to a certain extent, independent of their feudal lords, and acquired a degree of inherent power and importance by means of manufactures and trade. They were accordingly the first to rise in extensive and formidable concert against the system of misrule by the grandees and lords of the soil which then universally prevailed. And from the Netherlands, the movement was propagated into other countries. English liberty in particular is probably much indebted to these sturdy burghers. To us they gave much more than their example. Edward III. brought over to England large numbers of these cloth-workers from the Netherlands, who settling here, communicated to our labouring classes their own arts and habits of industry, and may also be supposed to have transmitted and diffused that new spirit of liberty which had principally induced them to leave the land of their birth. Elizabeth also, long after, again increased the population of this island by opening her ports to those mechanics of the Low Countries who were driven abroad in her day, by the tyrannical conduct of the Spanish government of that province, as administered by the notorious duke of Alva.

The first insurrection of the Flemings, however, against their princes, was, as we have observed, attended with very disastrous results to Ypres and the other towns, whose inhabitants engaged in it. "Before the commencement of these wars in Flanders," says Froissart, in commencing his account of the attempt made by the people, in the latter part of the fourteenth century, to restrain the oppressions of their governors, "the country was so fertile, and everything in such abundance, that it was marvellous to see, and the inhabitants of the principal towns lived in very grand state." But the war laid all this prosperity waste. "The people," he says, "were very murderous and cruel, and multitudes were slain or driven out of the country. The country itself was so much ruined, that it was said a hundred years would not restore it to the situation it was in before the war."

This war was left for some time at first to rage between the earl of Flanders and his insurgent subjects, who, according to an old custom of the country, having chosen themselves leaders, assumed the name of White-hoods. At length, however, the French king, Charles VI., struck in, to the aid of his brother potentate; and although the rebels had been hitherto successful at every point, this interference speedily turned the scale. The following is the account which Froissart gives of the submission of the city of Ypres to the powerful force which the earl was now enabled to bring against it:

"As soon as the citizens of Ypres learned that the earl was on his march thither with such a force, they were greatly alarmed; and the principal and richest inhabitants held a council, in which they resolved to open their gates, and go out to meet him, with offers to replace themselves under his obedience, trusting to his mercy. It was well known to him that they had allied themselves with Ghent through fear of the lower ranks, such as weavers, fullers, and other ill-intentioned people of the town; they besides depended on his kind and merciful character for their pardon. As they had resolved, so did they execute; and upwards of three hundred in a company went out of the town, carrying the keys of the gates with them. On meeting the earl of Flanders, they fell on their knees, and begged for mercy, saying, that they personally and the whole town, resigned themselves to his will. The Earl took pity on them, made them rise, and granted them his pardon. He entered the town of Ypres with his whole army, and remained there for three weeks, sending back those of the Franc and of Bruges to their several towns. During his residence in Ypres, he had upwards of seven hundred weavers and fullers beheaded; and all those who had been any way concerned in admitting John Lyon and the Ghent men into the town, who had slain the knights and men-at-arms whom he had sent thither, and which had enraged him so much. To prevent them again rebelling against him, he sent three hundred of the principal inhabitants to prison in Bruges, escorted by a handsome body of men-at-arms."

But these successes of the Earl of Flanders and his ally, the king of France, soon aroused a strong feeling of hostility against France in England. Froissart attributes this to envy. However this may be, Lord Henry Spencer, bishop of Norwich, having been about this time appointed by Pope Urban VI. commander-in-chief for England, of what was called a crusade in the interest of that pope, against his rival Clement IV., and having as such been placed at the head of a formidable force, he and his troops embarked for the continent, and landed at Calais on the 23d of April, 1383. A consultation was then held by the leaders with the object of determining in what direction they should next proceed; when it was resolved that the expedition should march into Flanders. They then sent to the insurgents in Ghent for their aid.—"When Peter du Bois, Peter le Nintre, and the captains in Ghent," continues the historian, "heard that the English demanded their assistance, and were lying before Ypres, they were much pleased, and prepared themselves to march thither as speedily as possible. They set out from Ghent on the Saturday morning after the octave of St Peter and St Paul, to the amount of near 20,000, with a very considerable train of carts, and in good array. They marched by Courtray, and came before Ypres. The English were rejoiced at their coming, and made great cheer for them, saying they would take Ypres, and then conquer Bruges, Damme, and Sluys, making no doubt that before September they would have conquered all Flanders. Thus did they boast of their good fortune."

The issue, however, was very mortifying. "It always happens," says Froissart, "that in war there are gains and losses; very extraordinary are the chances, as those know well who follow the profession. The siege of Ypres was pushed on with unwearied force; and it was fully the intention of the bishop of Norwich, the English, and Peter de Bois, to conquer Ypres by storm or otherwise, as the vigour of their attacks showed." But all their assaults being attended with no result, they resolved to adopt a new plan of operations. Froissart continues, "The English and Flemings, finding they could not take the town by storm, and having expended much of their artillery, resolved to have quantities of faggots made and collected, with which and earth they would fill up the ditches, so that they might advance to fight hand to hand with the garrison, undermine the walls, and, by throwing them down, win the place." Before this expedient could be executed, however, news was brought that the king of France was advancing with a powerful body of troops; and on receiving this intelligence, the bishop and his captains thought it best upon the whole to endeavour to make their escape as fast as they could. They reached home, and also contrived to carry with them a good deal of booty: but they were not thought to have brought much honour back from their campaign. "When these knights," the historian tells us, "returned to England, they were attacked by the common people, who told them they had behaved very badly in their expedition, for, from the prosperity they had had at the beginning, they ought to have conquered all Flanders."

YPSILANTI; an old Greek Fanariot family at Constantinople, descended from the Comneni, members of which have several times held the dignity of hospodar in Moldavia and Walachia. The grandfather of the princes Alexander and Demetrius, celebrated for their share in the Greek revolution, was executed at the command of the Porte, with the most horrible tortures. Their great-grandfather and uncle were victims of the bow-string. The father, Constantine Ypsilanti, hospodar of Walachia, was deposed by the Porte in 1805, but was reinstated at the request of Russia. When Russia threatened the Porte with war in 1806, he learned that his head was in danger, and fled to Jassy. The Russian government assigned him and his family Kiev as a residence. When the Russians advanced into Walachia, he hoped to recover this principality by their aid. With this view, he repaired thither, and armed the Walachians against the Turks; but instead of the 40,000 men whom the Russian general required of him, he could collect only 5000. The body of Russian auxiliaries was therefore too weak; and Ypsilanti had to escape, by way of Transylvania, to Russia, where he died at Kiev, in 1816. He wrote several works. His sons entered the Russian service. The eldest, *Alexander*, imperial Russian major-general, and aid-de-camp of the emperor, born at Constantinople, Dec. 12, 1792, went with his father, in 1805, to Petersburg, and entered the Russian service. He fought with distinction at Polotzk, in 1812, and was a captain of hussars, when a ball, at the battle of Dresden, Aug. 27, 1813, carried away his right hand. In 1814, he spent some time in Weimar. About this time, the emperor made him a colonel and his aid-de-camp. In 1817, he received the command of a brigade of hussars, and was appointed major-general. In 1820, he became acquainted with the Hetaireia. He joined this association, and eventually became its head. When he saw that the breaking out of the insurrection could no longer be delayed, one of his couriers having been arrested in Servia, so that he had reason to fear the discovery of the whole plan, he resolved to plant in Moldavia the standard of revolt. He crossed the Pruth with a few attendants, and, on Feb. 23, old style, (March [illegible]), at Jassy, the capital of Moldavia, under the very eyes of the hospodar, Michael Suzzo, issued a proclamation in which he announced that on this day Greece had kindled the torch of freedom, and thrown off the yoke of tyranny. (See *Greece, Revolution of*.) This step of Ypsilanti's was connected with the plan of a general insurrection, which was to break out simultaneously in the Morea, on the islands, and in Constantinople. Ypsilanti hoped to promote the main project by his entrance into Moldavia. The insurrection was also hastened by the enterprise of Theodore Wladimiresko. This rude but daring Walachian, after the death of the hospodar of Walachia, Alex. Suzzo, Jan. 30, 1821, had, with a band of Arnaouts, called the Walachian peasants and pandoors to arms, in order to obtain from the Porte, by means of the assistance of Russia, which he promised them, the restoration of the ancient rights of the country. Ypsilanti, who, however, was in no way connected with Wladimiresko, gave his companions and all the Hetairists, who hastened to him from Russia and Germany, the assurance that Russia would assist the cause of Greece. But the military insurrections in Italy, on account of which the congress of Laybach was convened, induced the emperor Alexander to express publicly his disapprobation of the undertaking of the Hetairists, and to summon their leader, the prince Alex. Ypsilanti, to make his defence. As he did not obey, the emperor caused his name to be struck from the rolls of the Russian army. The Russian consul at Jassy had already, April 9, issued two proclamations, in the name of his sovereign, commanding prince Ypsilanti and his adherents to return immediately to Russia, and exhorting the Moldavians to tranquillity and obedience to the Porte. Mich. Suzzo was, in consequence, obliged to leave Moldavia, April 11; and the boyards sent deputies to the Porte, praying that another hospodar might be given them, adding the assurance, that they would themselves suppress the rebellion. Ypsilanti, when he learned this, was on his march to Bucharest. He and his band, of about 5000 men, persisted firmly in their enterprise. April 10, he entered Bucharest, which city Wladimiresko, who would not join Ypsilanti, had left with his pandoors, shortly before. April 12, Ypsilanti marched to Tergowist, where he wasted his time, while Wladimiresko was negociating with the Porte. The boyards themselves had refused all participation in Ypsilanti's attempt; and many of them had fled, with their wives, children, and property, to Transylvania. Wladimiresko's insurrection was directed more against the boyards than against the Porte. At the same time, the three pachas of Widdin, Silistria, and Brailow, with 10,000 Turkish troops, entered Walachia and Moldavia. At Jassy, where the Hetairists had wrested the administration from the boyards, complete anarchy prevailed. Jussuf, seraskier of Brailow, defeated the Greeks at Galacz, May 13, took the city by storm, destroyed the French flotilla on the Danube, and compelled the Hetairists, May 18, to evacuate Jassy. George Cantacuzeno retired, with about 3000 men, without opposition, behind the Pruth. Meanwhile Wladimiresko had regained possession of Bucharest, where he continued to negociate with the Turks. May 28, he relinquished the city to Kiaya Mehmed, pacha of Silistria, and, after some inconsiderable skirmishes with the Turks, retreated to Pitescht, to make advances to prince Ypsilanti. But Ypsilanti caused him to be seized by captain Jordaki, (called also *Gorgakis*, or *George of Olympus*) conveyed to Tergowist, and after a trial by a court-martial, to be beheaded as guilty of high treason, June 7. This transaction excited much dissatisfaction and defection, because Theodore Wladimiresko had never formally acknowledged Ypsilanti's supremacy. A portion, indeed, of his Arnaouts, Walachians, and pandoors joined the Hetairists; but the pacha of Brailow was soon able to enter into secret communications with these Arnaouts. When Ypsilanti left his fortified position at Rimnik, and marched towards Dragaschan, his van, of 1000 men, led by the brave Jordaki, being attacked by the Turks, on June 19, the Walachians and pandoors took to flight, and Jordaki with a few hundred men was obliged to fall back to the sacred band of the Hetairists. A part of the Arnaouts now fled, and abandoned the artillery, consisting of five pieces of cannon. At this moment, a nephew of the murdered patriarch Gregory stepped forward, and exhorted his companions to show the sacredness of their cause by a heroic death. The youths advanced in close order, and fell by files in the conflict. A few only succeeded in saving themselves with Ypsilanti, in the fortified monastery of Costia. Thus was the flower of Greece destroyed. Alexander Ypsilanti now gave up the cause of Greece. Having crossed the frontiers, he was arrested in Transylvania, and, with his brother Nicholas, conveyed as a prisoner of state to the fortress of Mungatsch, in Hungary. From this place they were both removed, in August, 1823, to the fortress of Theresienstadt, in Bohemia, where they were treated with great mildness. The above-mentioned division of Greek troops, under prince George Cantacuzeno, was attacked by the Turks, June 25, at Stinka, on the Pruth, and defeated, after an engagement of six hours. Moldavia and Walachia remained occupied by the Turkish troops, who committed the greatest outrages, and were not entirely withdrawn from both principalities till 1826.—See *Nouvelles Observations sur la Valachie, etc., suivies d'un Précis historique des Evénemens qui se sont passés dans cette Province en* 1821, *par un Témoin oculaire, avec le Plan de la Bat. de Dragaschan. Par F. G. L.* (Paris, 1822). After prince Alexander had remained two years in Mungatsch, and four years and a half in Theresienstadt, Russia demanded his release, in August, 1827. This, however, was not granted until the end of November, and then under the condition, imposed by Austria, that the prince should not leave the Austrian dominions. Alex. Ypsilanti died at Vienna, in January, 1828, hardly thirty-six years of age.

During this time, *Demetrius Ypsilanti*, with full powers from his brother Alexander, had repaired to the insurgents in Greece. Demetrius (born Dec. 25, 1793), entered the Russian hussar regiment of guards, as a cornet, in 1815, and was soon after appointed adjutant of general Rajewsky. As second captain (equal in rank to lieutenant-colonel in the troops of the line), he distinguished himself in the campaign of 1814. He now appeared as commander in the Morea, where, as long as the Russian party had the preponderance, he was held in respect. He took the lead in the Greek government at Argos, was then proclaimed prince of Peloponnesus, and appointed general-in-chief in that peninsula. At the end of 1822, he became president of the legislative council. But the English party having begun to prevail, he was removed from his situation in 1823, and retired from public affairs, but on important exigencies took an active part. He saved the Peloponnesus on the invasion of Dram Ali, by throwing himself, with a band of Hellenists, into the fortress of Argos, and giving the other companies time to assemble. Against the resolution of the third national assembly of the Greeks at Epidaurus, requesting the British ambassador in Constantinople to negociate a peace between the Porte and the Greeks, which should provide for an independent Greek government, on condition of a yearly tribute, Demetrius Ypsilanti entered a protest. When Capo d'Istrias was appointed president of the Hellenic republic, in 1828, prince Demetrius received a command in Acarnania.

A third brother, *George*, born at Constantinople, March 21, 1794, accompanied Alexander Ypsilanti on the expedition to Moldavia and Walachia, and shared his misfortunes and his long imprisonment.

The fourth brother, *Nicolas*, born at Constantinople, August 16, 1796, was commander of the Sacred Band. He had the same fortune as Alexander and George. He died at Odessa, 3d April, 183

Of the two sisters, *Catharine* and *Maria*, the latter, born in 1798, devoted to the cause of her country her whole dowry, amounting to 350,000 francs.

The youngest brother, *Gregory Theodatius*, born at Bucharest, in 1805, received his education in Paris. The annual incomes of the family amount to one and a half million roubles.

YRIARTE.

1. *Juan de Yriarte*, royal librarian and member of the Spanish academy, a bibliographer of note, was born in 1702, on the island of Teneriffe. He studied classical literature at Paris. After eight years, he went to London, and soon after home, where he chiefly occupied himself with English literature. In 1724, he went to Madrid to study law; but his inclination to philology and bibliography predominated, and, being constantly in the royal library, then under the direction of the historian Juan de Ferreras, the latter soon made him secretary of the library. The fruit of his biographical studies was the catalogue of Greek manuscripts in that collection, the first volume of which appeared in 1764, folio, under the title *Regiæ Bibliothecæ Matritensis Codices MSS. Joannes Yriarte excussit, recensuit, Notis, Indicibus, Anecdotis pluribus evulgatis illustravit*, &c. This volume contains accounts of nearly sixty manuscripts, which Constantine Lascaris had copied with his own hand. This work was completed by a second volume. Yriarte also prepared catalogues of the geographical, chronological and mathematical works contained in the royal library, which appeared in 1729 and 1730, made many corrections and additions to Antonio's treatise on Spanish authors, &c. As a member of the Spanish academy, into which he was admitted in 1742, he was very active, and contributed many observations to the treatise on Spanish orthography, to the Castilian Grammar and the Dictionary of the academy. Among his Latin poems, his numerous epigrams deserve mention. He was an industrious contributor to the *Diario de los Literatos*. His favourite literary occupation was the collecting of Spanish proverbs, of which he brought together about 15,000, from books as well as from the mouths of the people. His Latin Grammar, on which he laboured forty years, contains rules in Spanish rhymes, with explanations in prose: it was not published until after his death, by his nephew in 1771, at Madrid, who also published, in 1774, the miscellaneous works of his uncle. He died in 1771, at Madrid.

2. *Tomas de Yriarte*, of whom a few words were said under the head *Iriarte*, nephew of the preceding, one of the best Spanish poets of modern times, was born in 1752. He first appeared as a poet in

1770, with a comedy (*Hacer que Hacemos*). This was followed by several translations of French plays for the royal theatre, and a few original dramatic compositions. But they are forgotten; and his literary fame is founded on his Fables. Before the publication of these, he produced a didactic poem, in five cantos, On Music (*La Musica*), the first edition of which (Madrid, 1779) is distinguished by typographical beauty. This poem is written in elegant language, but is deficient in poetical conception. Grainville translated it, in 1800, into French. In his Literary Fables (*Fabulas Literarias*), which first appeared in 1782, Yriarte attacked what he considered the faults and errors of literary men. They are the productions of an unpoetical period, in which the French manner was predominant in Spain. They are, therefore, cold, and without humour; but the language is easy, and there is much variety and elegance in the metres. They have been translated into French and German. In 1787, he collected his works in prose and verse, at Madrid, in six volumes, of which the first contains the Fables and *La Musica*. In the second are eleven Epistles, mostly satirical, also chiefly directed against the errors of scholars. The other volumes contain, besides, a number of imitations and original poems, also a metrical translation of the Epistles of Horace to the Pisos, with explanatory notes. One of his enemies, Juan Pablo Forner, irritated by his satires, wrote a bitter attack on him under the title of *Li Asno erudito* (The Learned Ass). Yriarte replied with his *Para Casos tales suelen tener los Maestros oficiales*. In 1788, he published a comedy, *La Senorita mal Criada*, in which, as in a former, *El Senorito mimado*, the Spanish critics praise the strict observance of the three unities. Yriarte died in 1794.—See *Ensayo de una Biblioteca Espanola de los mejores Escritores del Reynado de Carlos III., por Sempere y Guarinos* (Madrid, 1789, 6 vols.).

YSENPURG. See *Isenburg*.

YTHAN, or ITHAN, a river in Aberdeenshire, which rises in the hills of the parish of Forgue; after a south-easterly course of about thirty miles, being augmented about twelve miles from its mouth by the Gight, it falls into the sea at the small village of Newburgh. The parish of Foveran is on its south bank, and that of Slains on the north at its estuary. It is navigable for three miles, as far as [illegible]; and vessels of 100 or 150 tons burden can [illegible] a mile up. It possesses a valuable salmon fishery.

YTTRIA is the name of a very rare earth, discovered in the composition of a mineral found at Ytterby, in Sweden; hence its name. The name of the mineral is *gadolinite*. The earth may be obtained by fusing the gadolinite with two parts of caustic potash, washing the mass with boiling water, and filtering the liquor, which is of a fine green. This liquor is to be evaporated till no more oxide of manganese falls down from it in a black powder; after which the liquid is to be saturated with nitric acid. At the same time, digest the sediment that was not dissolved in very dilute [illegible] acid, which will dissolve the earth with [illegible] heat, leaving the silex and the highly-oxidized iron undissolved. Mix the two liquors, evaporate them to dryness, redissolve and filter, which will separate any silex or oxide of iron that may have been left. A few drops of a solution of carbonate of potash will separate any lime that may be present; and a cautious addition of hydrosulphuret of potash will throw down the oxide of manganese that may have been left; but if too much be employed, it will throw down the yttria also. Lastly, the yttria is to be precipitated by pure ammonia, well washed and dried. It is perfectly white. Its specific gravity is 4·842. It has neither taste nor smell. It is infusible alone, but with borax, melts into a transparent glass, or opaque-white, if the borax is in excess. It is insoluble in water, and in caustic fixed alkalies; but it dissolves in carbonat of ammonia, though it requires five or six times as much as glucine. It is soluble in most of the acids. The salts have the following general characters:—Many of them are insoluble in water. Precipitates are occasioned in those which dissolve, by phosphate of soda, carbonate of soda, oxalate of ammonia, tartrate of potash, and ferroprussiate of potash. If we except the sweet-tasted, soluble sulphate of yttria, the other salts of this earth resemble those with a base of lime in their solubility. When yttria is treated with potassium in the same manner as the other earths, similar results are obtained. The potassium becomes potash, and the earth assumes the appearance of a metal. Its texture is scaly; its colour gray-black, and lustre perfectly metallic. This scaly texture distinguishes it from aluminum and glucinum. Yttrium—for this is the name of the metallic base—is not oxidized either in air or water, at common temperatures; but when heated to redness, it burns with splendour, and becomes yttria.

YTTRO-CERITE; a massive mineral, of a reddish, grayish-white, or violet-blue colour. It occurs in crusts, sometimes having an indistinct cleavage; opaque; yields to the knife; specific gravity 3·447. Its constituents are oxide of cerium 13·15, yttria 14·6, lime 47·77, fluoric acid 24·45. It has hitherto been found only at Finbo, near Fahlun, in Sweden, imbedded in quartz.

YTTRO-TANTALITE occurs massive, has a degree of hardness above apatite, a specific gravity of 5·3 or 5·8, a metallic lustre, and a blackish-brown colour. It is opaque. Under the blow-pipe it decrepitates at first, but melts, by an increase of heat, into a greenish-yellow slag. It consists, according to Vauquelin, of 45 oxide of columbium, 55 of yttria and oxide of iron. It is found, along with gadolinite, at Ytterby, in Sweden, but is exceedingly rare.

YUCATAN; the most easterly state of the Mexican confederacy, in the form of a peninsula, jutting out into the gulf of Mexico, bounded northwest by the gulf of Mexico, south-east by the bay of Honduras, south by Guatamala, south-west by the state of Vera Cruz. The isthmus which connects it with the continent of North America is about 120 miles wide. Square miles, 30,000; population, 496;990; chief towns, Merida, the capital, Campeachy, and Valladolid. The soil is very fertile, and, when under proper cultivation, produces great crops of cotton, tobacco, pepper, the sugar-cane, indigo, maize, and other kinds of grain. The scarcity of water in the central parts of the state renders the crops variable; and years occur in which the poorer classes are driven to seek subsistence from roots. Cattle, fowls, and bees, are very numerous; wax and honey plentiful; but there are no mines. The forests abound with wild beasts. The principal article of commerce is logwood. The climate is hot, the summer beginning in April, and ending in September; but January and February are also warm. The British have some small settlements on the east coast of Yucatan for procuring logwood, the chief of which is at Balize.

YUG, in the Hindoo theology; the name of the ages of the world. The duration of the universe was fixed by the deity at 12,000 divine years, each of which contains 360 human years; so that the whole amount is equal to 4,320,000 human years. This duration was divided into four ages, which are to each other as 4, 3, 2, 1. The first age, *Krita-Yug*, comprises 4000; the second *Treta-Yug*, 3000; the third, *Dwapar-Yug*, 2000; the fourth, *Kali-Yug*, 1000 divine years. After each age, is a period of darkness, the first of 800, the second of 600, the third of 400, and the fourth of 200 divine years, which complete the period of 12,000 years. The whole period is called *Maha Yug*, the great *Yug*, or *Sadir Yug*, a period of four ages. 1000 *Maha-Yugs* form the day of Brama, from morning to evening; and an equal number his night, when he sleeps; the consequence of which is the dissolution of the universe into its original elements; so that every thing is sunk in a great sea. When Brama wakes, every thing revives. 360 such days form Brama's year, and he lives 100 such years. Upon his death a general dissolution again takes place, and lasts 100 years of Brama: then Brama is born again, and the worlds begin their old alternation of existence and dissolution. The whole life of Brama, is one day of Vishnu, from morning to evening. 360 such days make his year. He lives 100 years, and remains dead an equal period. Siva alone is immortal. This is evidently the doctrine of the votaries of Siva, while the worshippers of Vishnu claim a similar pre-eminence for their god. In the Bhagavat-Purana, it is further observed, that, during the day of Brama, or 1000 *Maha-Yugs*, fourteen dynasties (*manvantaras*) of men and gods follow each other; each, therefore, continues about 71 *Maha-Yugs*. Each has the name of its first ruler. We live in the seventh. Rhode has shown that Buddhism and Bramaism are mingled in this fable of the *Yugs*. The *Yugs* are also distinguished in a moral respect. As in the Persian, so in the Indian theology, virtue is made to decline in each successive age. It is represented under the figure of a steer, standing, in the first age, on four legs; in the second, on three; in the third, on two; and in the fourth, on one. The *Zend-Avesta* also says, in the first 1000 years Ormuzd and the good rule alone; in the second, Ahriman begins to appear; in the third, the influence of Ormuzd and Ahriman is equal; and, in the fourth, Ahriman's power is superior. The present is the last age of the world, the *Kali-Yug*, which, according to the calculation of the Bramins, began thirty years after Krishna's death, or 3101 years before Christ; so that at present, in 1839, we live in the 4940th year of the *Kali-Yug*. Among those who were saved at the time of the third dissolution of the world, and passed over into the fourth *Yug*, was a pious king named *Kistnei*, under whose government virtue continued to flourish. But now the steer (the symbol of virtue) stands only on one foot, and charity is the chief virtue to be practised. At the end of this age, after Kalighi's appearance, fire and water will destroy every thing, and the first *Yug* will be repeated, the sun, moon, and a the planets, being in the same sign of the zodiac as at the beginning of the world. Besides this, the Indians reckon by several other eras. See *Epoch*, also *Hindoo Mythology*, in the article *India*.

YULE; the name formerly given to Christmas. (q. v.)

YUMNA. See *Jumna*.

YVERDUN, IVERDON, or IFFERTEN, a town of Switzerland, in Vaud, at the south end of the lake of Neufchatel, at the entrance of the river Orbe, on an island, sixteen miles north of Lausanne, thirty-four south-west of Berne, forty-four north-north-east of Geneva; population 4000. It is delightfully situated, is neatly built, and has a public library, and a brisk traffic, chiefly in the transit of goods—an advantage which it owes to its command of water carriage, boats going from it into the Rhine, by the lakes of Neufchatel and Bienne, and the rivers Thiel and Aar. It has also considerable manufactures of linen, calico, &c. At this place is the school of the celebrated, Pestalozzi, which was first established here in 1804, and an ancient castle appropriated to its accommodation by the government. There are several other establishments for education. The sulphur baths here were known even to the Romans.

YVERNOIS, SIR FRANCIS D' a Genevan politician, was born at Geneva, in 1756, and received an excellent education in his native city. His restless ambition involved him in the disturbances which distracted the little republic, and he was banished in 1782. After the revolution in January 1789, he returned to Geneva, and became counsellor of state. But, being unable to prevent the interference of the French republic in the internal affairs of Geneva, or to play a prominent part after the democratic party had attained the ascendency, he went to England, and made various journeys in Europe as travelling tutor to lord Eardley. In the mean time Geneva had been united to France in 1798; but Yvernois and others had been declared incapable of ever becoming French citizens. He afterwards settled in England, and published political and literary works, in which he expressed his hatred of France with eloquence and talent. This gained him the favour of the British government, and the king of England knighted him. After the downfall of the French empire, in 1814, the republic of Geneva appointed him its minister in London, whence he proceeded, in the same capacity, to the congress of Vienna. After Napoleon's second abdication, in 1815, he returned to Geneva. Among the writings of Yvernois are his *Réflexions sur la Guerre*, in which he shows the necessity of reducing France to her old limits; and his *Tableau des Pertes que la Révolution et la Guerre ont causées au Peuple Français*. Most of his other writings had only a temporary interest.

YVETOT; a town of Normandy, in France, ninety miles north-west of Paris, with about 10,000 inhabitants. It is the seat of some tribunals, and considerable woollen, linen and cotton manufactures. The lords of this place bore the title king from the year 524 till the time of Louis XI

Z

Z, the last letter of the English alphabet, is a sibilant and semivowel, representing the same sound which the Germans represent by *s*, or the soft sound of the English *s*, the only difference between *s* and *z* being that the breath is emitted less forcibly in pronouncing the latter: the organs of the mouth are in the same position in both cases. (For further observations connected with this point, see the article *S*.) The *z*, in German, has a compound sound, corresponding to our *ts*; and modern German writers, therefore, omit the *t*, formerly written before *z*, in some German words. In Italian, it is sometimes sounded like our *ts*, sometimes like *ds*. In Spanish, it corresponds to our *th*. In French, when pronounced at all, it has the sound of a forcible *s*. *Z* was originally a Greek letter (ζ). As a numeral, it signified two thousand, according to the verse—

Ultima Z tenens, finem bis mille tenebit.

When a dash was added at the top $(\overline{Z})$, it signified two thousand times a thousand. On French coins, it denotes those struck at Grenoble.

ZAARDAM, or SAARDAM; a town in North Holland, near the Y, five miles north of Amsterdam; population, 10,717. It consists of two villages, East and West Zaardam. It carries on an active trade in timber, tar, train-oil, &c.; has extensive manufactures of ropes, tobacco, and paper; and the most important branch of its industry is and has long been, ship-building. It was here that the czar Peter the Great studied the art of ship-building; and the house which he occupied is still pointed out.

ZABIANS. See *Sabians*.

ZABIRA, George; a learned Greek, born in Siatista, in Macedonia, and educated in Thessalonica. About the year 1764, he went, as a clerk, to Hungary. At Colotscha, he learned Latin, and the modern European languages, and collected a library. He afterwards visited several German universities, and established himself at Szabadszallas, as a merchant. In 1795, he caused Cantemir's work on the Rumani (q. v.) and the Brancowani to be published. Among his manuscripts is the Θέατρον Ἑλληνικόν, a biographical catalogue of all modern Greek authors who have lived since the conquest of Constantinople. He died Sept. 19, 1804.

ZACATECAS; formerly an intendancy, now a state of Mexico, bounded north by Durango, east by San Luis Potosi, south by Guanaxuato, and west by [illegible]; eighty-five leagues long, and fifty-one at its widest, broad; square leagues, 2353; population, 272,901. It is a mountainous and arid tract, with a rigorous climate, and very thinly peopled. There are eleven convents for males, and four for females, in the state. The table-land, which forms the central part, rises to upwards of 6500 feet above the level of the sea. It is famous for its rich silver mines. The capital, of the same name, lies 240 miles north-west of Mexico; lon. 101° 35′ W.; lat. 22° [illegible] N.; population, 30,000. It is situated in a mountainous country, in the vicinity of some of the richest silver mines in Mexico, which are wrought by great numbers. It is well built, and contains a college, an hospital, a number of churches, and a mint, in which were coined, from 1810 to 1826, 32,108,185 dollars. Several other towns, as Sombrerete, Fresnillo, Jerez, Pinos, and Nochisltlan, have a population varying from 14,000 to 18,000 souls. Maize, wheat, chile, &c., are among the products.

ZACH, Francis, baron von, one of the most eminent astronomers and mathematicians of our day, was born at Presburg, in 1754, and died at Paris, of the spasmodic cholera, in 1832. After having entered the Austrian military service, and passed some years in London, he was appointed grand chamberlain to the duchess dowager of Saxe-Gotha, who then resided at Eisenberg, and, in 1804, and 1805, accompanied her on a tour through France. From 1787 to 1806, he had the direction of the observatory at Seeberg. After that time, he resided chiefly abroad, and accompanied the duchess to Paris and Italy. In the latter country, through his influence, an observatory was erected at Naples, and another near Lucca. Baron von Zach also contributed much to extend the field of astronomical science by his writings, in which are united clearness and profoundness. His Geographical Ephemerides, and the continuation of the same work under the titles of monthly Correspondence for promoting the Knowledge of the Heavens and the Earth, and *Correspondance Astronomique*, are works of great value. He also published several treatises on particular subjects, and was the author of many papers in different periodical publications. Of his works we will mention his treatise *L'Attraction des Montagnes et ses Effets sur les Fils-à-Plomb* (Avignon, 1814, 2 vols.); his *Tabulæ Montium Solis novæ et correctæ* (Gotha, 1792, 4to.); and his *Almanacca Genovese*, which he edited in Genoa.

ZACHARIÆ, Just Frederic William, one of the German authors who prepared the way for the advancement of German literature after the time of Gottsched, was born in 1726, and died in 1777, professor of belles-lettres in the Carolinum at Brunswick. His *Renomist*—the German word for disorderly students (see Russel's *Germany*)—a comic epos, published in 1742, and some other works, display humour. His works appeared in a second edition, in 2 vols. (Brunswick, 1772). An additional volume was published in 1781.

ZACHARIAH. See *Zechariah*.

ZACYNTHUS. See *Zante*.

ZADOC (*Sadoc*). See *Sadducees*.

ZAFFRE is the residuum of cobalt, after the sulphur, arsenic, and other volatile matters of arsenical cobalt, have been expelled by calcination. The zaffre that is commonly sold, and which comes from Saxony, is a mixture of oxide of cobalt with some vitrifiable earth. It is of a gray colour.

ZAFTLEEVEN, or SACHTLEEVEN, Hermann, one of the most skilful painters of landscapes, was born at Rotterdam, in 1609. He lived in Utrecht, and died in that city, in 1685. His views exhibit the environs of Utrecht, or Rhenish scenery. D'Argenville says that Zaftleeven visited Italy; but the Dutch writers deny this. He portrays nature under serene and elevated aspects; a smiling heaven overarches his cities and mountains, and a warm air breathes itself over the sunny and retiring distance. His paintings are scattered in different places. Descamps gives a list of his works. Zaftleeven also employed the etching needle.—His brother *Cornelius*, born at Rotterdam, in 1612, was a successful painter of scenes from common life.

ZAGATAI. See *Tartary*.

ZAHARA, Desert of. See *Sahara*.

ZAHRINGEN; a village near Freiburg, in what was formerly the Austrian Brisgau, with the ruins of an ancient castle, from which the ancient dukes of Zähringen, the ancestors of the grand-dukes of Baden, derived their name.

ZAIMS, and TIMARIOTES, are possessors of Turkish fiefs, who, according to a law of the sultan Amurath I., in the fourteenth century, are bound to furnish spahis, or cavalry, as the condition of enjoying their fiefs. The Porte maintains only about ten or twelve thousand spahis, who are paid by the government, and called *kapikuly*. The rest of the spahis are furnished by the possessors of *timars*. The number of all the zaims (i. e. such vassals as have a revenue of from 20,000 to 100,000 aspers annually from their fiefs) is about 6689. For every 5000 aspers, they must send one horseman into the field in time of war, so that a zaim cannot send less than four nor more than twenty spahis. The number of the timariotes, however, or of those vassals who have from 6000 to 19,999 aspers annually, amounts to 52,649. These must furnish one spahi for every 3000 aspers; therefore each of them from two to six spahis. Thus the minimum of their collective quotas is 134,054 men. In 1792, it was resolved to unite all the timars with the imperial domains, after the death of the possessors; upon which the government was to support the army. The number of troops, therefore, has not changed much. Besides these troops, the Porte maintains another corps of cavalry, consisting of the former rifle makers and armourers. This kind of cavalry, called *jebeddshy*, is divided into sixty ortas, each of which, according to rule, should contain 500 men; but the number is never complete, and the ortas together never contain more than 18,000 men. Since the introduction of the European military system into Turkey, and the abolition of the janizaries (in 1826), part of the cavalry has also received another organization. Yet in many provinces, the military fiefs still remain, and are held upon the conditions above mentioned.

ZIARE, or CONGO; a river of Africa, which is supposed to rise in about lat. 10° S., and which takes a northerly course to lat. 3°, in Congo, after which it takes a south-west direction, and runs into the Atlantic at Fathomless point; lon. 12° 20′ E.; lat. 6° S. It is less than three miles wide at the mouth, has a very impetuous current, and pours a great mass of water into the ocean. In 1816, an expedition was fitted out from England to explore this river; but the company were unable to navigate the river, either with their sloop or with boats, farther than 120 miles. Leaving their sloop, they proceeded on foot 150 miles farther; but, meeting with insuperable difficulties, they were compelled to return.—See Tuckey's *Expedition to explore the Zaire or Congo* (4to., 1818).—It has been supposed by some, that the Zaire, or Congo, is the outlet for the waters of the Niger; but the discoverers Lander have refuted this supposition. See Nig

ZAJONCZEK, Joseph, prince, senator, gen of infantry, viceroy of the kingdom of Poland, b in 1752, at Kaminieck, of a noble but poor fam like other young Polish noblemen, entered the ar became, in 1784, lieutenant-colonel, in 1793 colo and commander of a regiment. He served in t war of Poland against Russia, and was made ma general. But Poland was overcome, and Zajoncz with many others, emigrated to France. On way thither, he was arrested in Gallicia, toge with his brother, and both were imprisoned Josephstadt. When set at liberty, he went Paris, and was made general of brigade in the Fr army in Italy. The Polish legion did great serv in that war, and Zajonczek distinguished him He accompanied Napoleon to Egypt, and afterw commanded a division of French troops in In 1812, he accompanied Napoleon to Russia, wh he lost a leg. He then quitted the French ar In 1815, the emperor Alexander appointed h viceroy, or *namiestnik*, in Poland. In 1818, he w made a prince. Nicholas confirmed him, in in his dignities and privileges. He died at War July 28, 1826.

ZALEUCUS; the lawgiver of the republic Locris, a Greek colony in Græcia Magna. He li according to some, 500 B. C., and was a discip Pythagoras; according to others, he lived as as the seventh century B. C. Only a few dis nected notices of his life and laws can be gl from ancient authors. His laws seem to have b very severe. In order to suppress extravagance dress, he ordained that prostitutes alone sh wear jewels and ornaments of gold. Adultery w to be punished by the loss of both eyes. The of the lawgiver himself was convicted of this cr the people, actuated by esteem for the father, p ed him to acquit his son; but Zaleucus rem inexorable. In order, however, to satisfy the d mands of parental love, as well as the requisi of the law, he condemned his son to lose one to which he added one of his own. This is sa have had such an effect, that, as long as the l giver lived, no adultery was heard of in the rep lic of Locris. In order to maintain the au of his laws, he ordained that every man who sh propose a new law should appear with a rope his neck, in order to be immediately strang the proposed law was not preferred to the ol one.

ZALUSKI; a Polish family, known in the ary and political history of their country.

Andrew Stanislaus, bishop of Cracow, die 1758, and left his library of 20,000 volumes to university of that city.

His brother, *Joseph Andrew*, bishop of Ki published the *Leges, Statuta, Consuetudines et* *vilegia Regni Poloniæ* (Warsaw, 1732, fol.). *Specimen Historicum Polonicæ Criticæ* is also valued. He died in 1774.

A count *Joseph Zaluski*, aid-de-camp of the peror Alexander, was made *curator* of the uni sity of Cracow, in 1826. See *Cracow*.

ZAMBECCARI, Francesco, count, celeb as an aëronaut, was born in 1756, at Bologna, was descended of an ancient family, one of the senatorial families of the city. He was care educated, and made great proficiency in mathe tics. Having entered the Spanish naval ser Zambeccari was captured by the Turks, and ca to Constantinople, where he was put into the bagnio. His liberation was finally effected by the interposition of the Spanish ambassador; and the count made a tour in the Levant and in Africa, and afterwards visited the European capitals. He then returned to his native country, and occupied himself with the study of aëronautics. He had devised an ingenious contrivance for taking advantage of the different currents of air at different elevations, so as to give what direction he should choose to the balloon. His idea was to cause the balloon to rise or sink at pleasure by increasing or diminishing the quantity of gas, and to guide its course by oars. In 1812, he attempted to carry this project into execution, although the weather was highly unfavourable; but the balloon, having become entangled in a tree, took fire, and the unfortunate aëronaut perished, a victim to his zeal for science.

ZAMOISKI. Among several distinguished men of this name are,

1. *John Zamoiski* (in Latin, *Samoscius*), born in 1542, the greatest Polish statesman and scholar of his time. He studied at Paris and Padua, became chancellor of the realm and general-in-chief, and died in 1605. It was chiefly through his means that Sigismund III. obtained the Polish crown. He raised an army, partly at his own expense, and defended the frontiers of the republic against the Swedes, Russians and Tartars. At the same time, he promoted the sciences by inviting foreign scholars into the country, establishing libraries, and founding learned institutions. He wrote, among other works, *De Senatu Romano* (in Grævius's *Thes. ant. Rom.* 1); *De perfecto Senatore*.

2. *Andrzey Zamoiski*, high chancellor, the distinguished defender of the independence of his country, was early a military officer of signal courage and talent, subsequently a senator and high chancellor (1764). He strove to suppress the disturbances at the election of king Stanislaus Poniatowski, and afterwards resigned all his offices, because he could no longer serve his country. In 1776, he accepted the invitation of the diet to prepare a code of the laws, in which he restored the rights of the third estate (Polish, Warsaw, 1778, 3 vols., in German, by Nikisch, Warsaw, 1780). The king approved of this excellent work, bnt the diet would not accept it. Soon after the great political change in 1791, the count died, in January, 1792. His name was every where held in reverence. He was a philosopher in the true sense of the word, just, wise and benevolent. He gave the first example of the abolition of bondage on his estates. His wife, Constantia, a princess Czartoryska, was an uncommonly accomplished and noble woman. She died in 1797.

ZAMOLXIS, the Getian; according to some, a slave of Pythagoras and his disciple; but, according to Herodotus, he belongs to an earlier age (Herod. iv, 94 and 96). He was esteemed in antiquity as a wise man, and one who conferred great benefits on his people. He is said to have taught them the immortality of the soul (Herodotus iv, 94), and to have given them wise laws; on which account divine honours were paid him after his death.

ZAMORIN. See *Calicut*.

ZAMOSC; the strongest fortress of the kingdom of Poland, in the woiwodeship of Lublin, between this place and Lemberg, in a south-eastern direction from Warsaw, on the river Wieprz; lon. [illegible] 15' E.; lat. 50° 42′ N. In 1809, the Poles took it from the Austrians, and, in 1813, the Russians from the French. The place was an entailed estate of the Zamoiski family, and was built in the Italian style, by the famous general and chancellor John Zamoiski (q. v.), after he had defeated the archduke Maximilian of Austria. In 1820, the state bought the town, with the environs, from the senator count Stanislaus Kostka de Zamoiski. Zamosc was now deprived of its extensive suburbs, and changed into a fortress. The coat of arms of the Zamoiski family is still, or at least was till of late, preserved on the walls. The place contains a large palace, several other large buildings, among which is an arsenal, four churches, of which one is Greek, two convents, a theatre, &c. Population, exclusive of the garrison, 3500. There is here a gymnasium, a library, and a printing-office, all established by John Zamoiski, already mentioned.

ZAMPIERI. See *Dominichino*.

ZANESVILLE, a flourishing town and seat of justice for Muskingum county, Ohio, is situated on the east bank of Muskingum river, immediately adjoining the falls, in lat. 40° N., lon. 82° W. It contains between 3 and 4000 inhabitants On the falls have been erected several mills, among which are flour and saw mills, a rolling mill, a nail factory, a woollen factory, and a steam paper mill. The town has two glass factories.

ZANETTI, Antonio Maria, count, a distinguished connoisseur, who acquired great reputation for his taste and learning, and for his talent for engraving, was born at Venice, in 1680. At the early age of fourteen, he had already executed several engravings; and, after finishing his education, he visited the different schools of Italy, and at a later period went to England, for the purpose of examining the collection of the earl of Arundel, the finest specimens of which he copied. He expended his fortune in the collection of a cabinet of antiquities, the value of which may be estimated from the work of Gori upon the gems belonging to it—*Gemmæ Antiquæ Zanetti* (Venice, 1758, fol., with 80 plates). Zanetti likewise rediscovered the lost art of chiaro-scuro engraving, which had been invented by Carpi. Among the works of Zanetti, the *Lettere sulla Pittura, Scultura ed Architettura* (Rome, 1754, 7 vols., 4to.) are important, as illustrative of the history of art. He published several collections of engravings:—1. *Antiche Statue Greche e Romane che si trovano in Venezia* (fol.); 2. *Icones ex Musæo suo* &c., (fol., with 100 plates, 1743); and, 3. *Raccolta di varie Stampe a Chiaro-scuro* (with seventy-one wood-cuts and thirty other engravings). Zanetti died at Venice in 1766. His nephew *Antonio Maria*, the younger, librarian of St Mark's, in Venice, died in 1778, was also the author of several works upon art and antiquities.

ZANGUEBAR; the name given to a large territory of Africa, bordering on the Eastern sea, including the countries of Melinda, Magadoxo, Mongala, Jubo, Mozambique, and some others, extending from lat. 2° N. to 21° S. The name is said to import "the coast of the negroes," all the inhabitants being blacks, with curled woolly hair.

ZANNI, ZANNESCHI. See *Harlequin* and *Masks*.

ZANOTTI, Francesco Maria, born in 1692, at Bologna, was the son of a comedian, was educated in the college of the Jesuits, in 1718 was made professor of philosophy, and librarian, in 1723 secretary, and in 1766 president of the university of Bologna. He wrote poetry in Tuscan and Latin verse; also five essays, containing rules for the different kinds of poetry. At the jubilee in Rome, in 1750, he delivered a eulogy on the fine arts, in the capitol. In a second oration, he attacked the first, and in a third refuted the second. These are distinguished for beauty of style, and deep and lofty thoughts, as are all of his philosophical and physical writings, especially his Morals and the dialogues on the pressure of bodies. His principal production is his Commentaries on the Academy, containing a history of this learned society, and an analysis of all the physico-mathematical treatises laid before it. The Memoirs of this society contain several treatises on geometrical, analytical, physical, and musical subjects, written by him. In his *De Viribus Centralibus*, he explains Newton's doctrine of the central forces. A collection of his works appeared at Bologna, in 1779. He died in 1777.—*Giampietro Cavazzoni Zanotti*, born at Paris in 1674, wrote several works relating to the history of the fine arts in Bologna. As secretary to the Clementine academy of painting at Bologna, he wrote *Storia dell' Accademia Clementina* (2 vols., fol., Bologna, 1739). He died in 1765.—*Eustachio Zanotti*, of Bologna, born in 1707, professor of astronomy there, died in 1782, is known by his observations on comets and the form of the earth; also by his optical and hydrometrical experiments.

ZANTE (anciently *Zacynthus*); one of the seven Ionian Islands, in the Mediterranean, situated to the south of Cephalonia, of irregular form, fifteen miles long, and eight broad; square miles, 160; population 40,000. In its aspect, it is the finest of the Ionian Islands, presenting, when viewed from the fort above the town of Zante, a prospect of vales and eminences richly cultivated, covered with vineyards, olive plantations, orange, and other fruit trees, and containing numerous hamlets or villages. The whole surface of the island presents traces of subterraneous fire, discovered in some parts by warm sulphureous springs, in others, by heat in the soil. It has springs of petroleum and mineral tar, which are productive. The climate, though very hot in summer, is not unwholesome. The chief products are currants, also olive oil, and wine; some cotton and silk. The corn raised is hardly equal to four months' consumption. See *Ionian Islands*.

Zante, the capital of the island, has a population of 20,000 souls; lon. 21° 8' E.; lat. 37° 50' N. It is the largest town in the republic of the Seven Islands, pleasantly situated at the bottom of a small bay, on a hill of gentle declivity. It resembles in its appearance an Italian town. The principal street, which traverses it in its whole length, is broad and handsome, bordered with well-built houses and churches, and has a foot-pavement. The houses are partly of brick, and partly of wood, and, on account of the frequency of earthquakes, seldom exceed one or two stories. The harbour is spacious; the environs exceedingly pleasant and picturesque. In 1820, several hundred houses were overthrown here by an earthquake. The island was in the possession of the Venicians, from the end of the fourteenth to the end of the eighteenth century. In 1797, it was taken by the French, and, in 1799, by the Russians. In 1815, it became one of the members of the Ionian republic.

ZANTHOPICRITE; the name given to a crystalline substance, extracted from the bark of the zanthoxilum of the Caribbee islands.

ZAPPI, GIOVANNI BATTISTA FELICE; born at Imola, in 1667, one of the best Italian poets of his age. After having studied law at Bologna, w
he made so rapid progress that the decree of d
was conferred upon him when he was only thir
years old, he went to Rome, where he soon di
guished himself as a poet. He was one of
founders and chief ornaments of the acade
of the Arcadians. His poems are graceful, es
cially his *canzoni* and madrigals, but at times a
ficial. Clement XI. gave him the hope of c
siderable benefices; but he died in 1719, w
out having obtained them. His wife, Faustina M
ratti, daughter of the distinguished Roman pa
Carlo Maratti, was equally distinguished for be
and poetical talent.

ZAR. See *Czar*.

ZARLINO, GIUSEPPA, born in 1540, (accordi
to Gerber, in 1520), at Chioggia, near Venice, o
the Adriatic sea, died in Venice in 1599. He was o
of the greatest of the theoretical musicians who pr
ceded Rameau and Rousseau. He determined m
accurately the relation of the major and minor th
and by his *Instituzioni armoniche* (Venice, 15
1573, folio), laid the foundation of a thorough tr
ment of harmony. As early as his eighteenth ye
he appeared as an author, and wrote a number o
works, published collectively, under the title o
Instituzioni armoniche and *Dimostrazioni armon*
(1589, 4 vols., folio). As a composer, he is chi
known by a piece of music performed under his d
rection, as chapel-master in the St. Mark's chu
Venice, at the celebration of the victory of Lep
to. Much information respecting the music of th
sixteenth century is contained in his works; but h
style is not attractive.

ZARSKOJE SELO (i.e. Sara's Village, so cal
from a lady who owned it when it was yet a vi
lage) is an imperial pleasure castle, twenty-fi
wersts (about seventeen miles) south of St Peter
burg, from which a highway leads to it throug
very monotonous country. Catharine I. has
castle here, which Elizabeth enlarged and emb
lished in 1744, and to which Catharine II., wh
favourite residence it was, gave its present sp
dour. .The large palace, three stories high, is m
nificently ornamented: even the outer corn
and other ornaments are gilt; yet most of it, w
the exception of what Catharine II. changed o
built herself, is in an old fashioned style. Am
the principal objects of attention, are the gr
staircase; the saloon, lined with mirrors, t
chapel; the porcelain room; and the amber ro
in which the walls are covered from the floor to t
ceiling with sculptures of amber. The rooms co
tain magnificent furniture and beautiful painti
There is also a gallery of bronze figures, made
artists of the Petersburg academy. In the garde
which are laid out in the English manner, by a G
man, are a hermitage, with statues and vases, R
man and Gothic temples, pyramids, several colu
and obelisks, monuments, and triumphal arch
which Catharine II. caused to be erected to co
Romanzoff and the brothers Orloff. (q. v.) Th
entrance of the garden is now adorned by a colo
triumphal arch of an antique form, consisting of c
iron, with the inscription, "Sacred to my de
companions in arms," erected by the empe
Alexander, after the wars of 1812, 1813 and 181
Near this palace lies the town of Sofia, with wh
Zarskoje Selo is at present united, and where, so
years ago, a lyceum, for the education of civil of
cers, was erected. The palace appropriated to th
lyceum was burned down in 1820.

ZAUNER, Francis de, was born at Feldpatan, in German Tyrol, in 1746. He early evinced a decided taste for sculpture. In 1766, he went to Vienna, where he worked for five years with professor Schletterer. He studied with great zeal; and, a proposal having been made to set up some statues at Schönbrunn (q. v.), he offered to cast them. Prince Kaunitz (q. v.) ordered him to bring within fifteen days a model for a spring, representing the three largest rivers of Austria. The model met with approbation. It was executed on a large scale; and the empress Maria Theresa took the artist into favour. Zauner received, in 1776, assistance from the government to go to Rome, where he studied for four years. In 1781, he was made professor of sculpture in Vienna. He improved the manner of studying this art in the Austrian capital, and executed a number of works; among others, the colossal statue of the emperor Joseph II., which the emperor Francis II. caused to be erected, in honour of his uncle, in the Joseph square, in 1807. It is one of the largest statues in Europe. Zauner cast the statue in a manner invented by himself, which succeeded perfectly. He also executed the monument of the emperor Leopold II. in white marble, in the church of St Augustine. There are many busts, statues and bass-reliefs by this artist. Zauner died in 1822, in Vienna.

ZEA. See *Maize*.

ZEA, Francisco Antonio, was born at Medellin, in the province of Antioquia, in New Grenada, Oct. 20, 1770. He studied at the university of Bogotá, and, at an early age, attained very distinguished academic honours there. When the government undertook to explore the vegetable riches of the country, young Zea was associated with the learned Mutis in this commission. In 1794, he was imprisoned in consequence of the freedom of his observations upon political subjects, at the same time with don Antonio Narino and other lovers of liberty. The particular offence of which he was accused, was having participated in certain seditious meetings and compositions, tending to the independence of New Grenada. His trial lasted several years, during which he was held in confinement, first in America, and then subsequently in Spain, whither the decision of the cause was transferred; and, at the expiration of that time, he was discharged, it being considered that his long imprisonment had sufficiently punished him for his imprudence. But, when restored to liberty, he was not permitted to return to America, being obliged, on various pretexts, to reside in France, with a pension of 6000 francs. In 1802, he returned to Spain, and was made adjunct director of the botanic garden of Madrid, and, in 1804, director-in-chief, and professor of natural sciences, notwithstanding his anxiety for permission to revisit his native country. The revolution of Aranjuez, which found him engaged in scientific researches, drew him into the public service. He was nominated a member of the junta of *notables*, which met at Bayonne in 1808. Afterwards he had the direction of a part of the ministry of the interior, and, finally, was prefect of Malaga until the retreat of the French army. This event enabled him to terminate his banishment. In 1814, he embarked from England, and hastened to join Bolivar in his expedition against the Spaniards of Venezuela. Thenceforth, he became a party to all the exertions of the struggling patriots, as the friend, the adviser, and the political guide of Bolivar. He was successively intendant-general of the liberating army, president of the congress of Angostura, and vice-president of the republic of Columbia, and, finally, envoy extraordinary and minister plenipotentiary to all those courts in Europe to which he might think proper to address himself, being invested with the whole representation of Columbia, for every species of affairs. His commission is dated Dec. 24, 1819. Zea appeared in London in 1820, invested with these unlimited powers, and, although he did not succeed in obtaining an acknowledgment of the independence of his country, yet he was every where heard with respect, and negotiated a loan for £2,000,000 sterling with a company of English bankers at Paris, March 13, 1822. The terms of the loan were, as might be expected, rather unfavourable to the new republic, and, in the sequel, drew much obliquy upon Zea. Rumours arose that his powers were defective; but a full examination proved that the report was wholly unfounded, and the loan, although censured by the Colombian congress, was recognised and confirmed. The financial embarrassments of the republic ought not to occasion any reflections upon the memory of Zea, who did every thing for the interest of his country which circumstances would permit. He died at Bath, of an aneurism of the heart, Nov. 28, 1822, aged fifty-two years.

ZEALAND, or ZEELAND; a province of Holland, comprising the ancient county of Zealand and Dutch Flanders, composed chiefly of islands at the mouth of the Scheldt, namely, Schowen, Duiveland, Tholen, Walcheren, North and South Beveland, and Wolfersdyk. The continental part consists merely of a strip lying along the south bank of the Hond, or West Scheldt. The province is bounded north by the Hond, or West Scheldt, east and south by East Flanders, and west by West Flanders and the sea; in 1829, population 123,184; square miles, 625. The chief towns are Middleburg, Flushing, and Zierick-see. The surface is level, and lies so low that it is necessary to protect the country from inundation by strong dikes, which are kept up at great labour and expense. These dikes are from twenty to thirty yards broad at the bottom, and of sufficient width at the top for two carriages to pass abreast; yet the country has been exposed to heavy calamities from the sea's breaking over the dikes in storms. The soil is a rich, black mould, excellent for pasturage, and for the culture of madder, flax, cole-seed, &c. The exports are corn, madder, flax, salt, meat, linen yarn, rape seed, and oil. The air is damp from exhalations of fresh water, productive of bilious complaints and agues. The majority of the inhabitants are Calvinists; there are, also, some Catholics, Lutherans, and Mennonists. See *Netherlands*.

ZEALAND, or SEELAND; the largest of the Danish islands between the Cattegat and the Baltic, separated from Sweden by the Sound, and from Funen by the Great Belt; about sixty-five miles long from north to south, and sixty from east to west; square miles, 2800; population, 296,350. It has no mountains; but the surface is finely variegated, having small hills and fields of a fertile soil, intersected by canals, resembling in some parts, in summer, when the ground is covered with vegetation, the country of Lombardy. It produces large crops of corn, and has excellent pasture. Besides several towns of considerable importance, it contains the fortress of Elsinore, or Helsingör, and the capital and royal residence, Copenhagen. See *Denmark*, and *Copenhagen*.

ZEALAND, NEW; two islands in the South Pacific ocean, discovered by the Dutch navigator Tasman, in 1642. He sailed along the eastern coast, and supposed it to be a part of the southern continent, then imagined to occupy these unknown regions. From the Dutch the newly-discovered country received the name of New Zealand. In 1769, Cook first discovered the strait which bears his name, and separates the two islands from each other, the northernmost of which is called Eaheinomauwe, and the southernmost Tavai-Poenamoo. They extend in their whole length about 800 miles, with an average breadth of about 100 miles, their position lengthwise being between the 48° and 34° of south latitude, and resembling, with respect to temperature, (after an allowance for the lower degree of heat in the southern hemisphere) that of the land between the south of Portugal and the north of France; pervading, we may say, but without exceeding, the most favoured part of the temperate region: and numerous witnesses of ample experience concur in describing the extremes of cold in winter and heat in summer as being within peculiarly narrow limits; which is to describe the climate as one of the most equable in the world. The two islands are intersected in the greater part of their length by a chain of mountains perpetually covered with snow, and higher, it is supposed, than the European Alps; from which it would be inferred, as is really the case, that the country abounds in streams and rivers always flowing: droughts, such as occur in New South Wales, have never been known, but, on the contrary, rain falls plentifully in every due season, though never to an inconvenient degree.

Cook's strait between the two islands, forms part of the direct track of vessels homeward bound from the Australian colonies; many such vessels go through Cook's Strait, while the others at present pass New Zealand at either its southern or northern extremity. Lying about 300 leagues east of the eastern shore of New Holland and Van Diemen's Land, these islands have recently become the theatre of an active commerce between the New Zealanders and the British colonists in that region. During the year 1830, the total tonnage of vessels cleared out from New South Wales for New Zealand was 5888 tons; and of seventy-eight vessels cleared out from Sydney, fifty-six were for New Zealand. These voyages were undertaken chiefly for the purpose of procuring New Zealand flax; but it has also been customary for the vessels to land parties on different parts of the coast, to prosecute the whale and seal fisheries in the bays, which are frequented, at certain seasons of the year, by the black whale and the seal. Establishments have also been formed for the purpose of procuring spars for shipping, and timber for house-building; and several large vessels have been built here by British mechanics, assisted by the natives. (Busby's *Authentic Information relative to New South Wales and New Zealand*, London, 1832.) The church missionary society and the Wesleyan missionary society have both had settlements on the northern island for a number of years. The stations of the former are at the Bay of Islands and Kidee Kidee, sixteen miles from that place. About a dozen missionaries, with their families, reside here, and have established schools for the instruction of the natives. These circumstances, and the difficulties occasioned by the conduct of runaway convicts from New South Wales, have led the British government to establish an agent or resident in New Zealand. New Zealand has often been pointed out as a fit place for an experiment in colonization; but the single circumstance of the occasional practice of cannibalism among the natives, seems to have been sufficient heretofore to prevent any such scheme from being carried into execution; although the fact is, that the New Zealanders are a much superior race to many which are not addicted to that horrible custom, and, what is above all things important, eminently improveable. A plan has at length been formed for realizing this desirable object by a body named the New Zealand Association, consisting of two classes of members; first, heads of families, and others, who have resolved to establish themselves in the proposed colony; and, secondly, a small body of public men, who, as a committee, have undertaken the task of carrying the measure into execution. These public men are of all parties; the list contains, amongst others, the names of Mr F. Baring, the earl of Durham, Walter F. Campbell of Islay, Esq., Sir George Sinclair, and Sir William Molesworth, all of them members of the legislature. They have published a small volume, detailing their plans, and describing the country. (London, 1837.)

Among the latest accounts of New Zealand, are Cruise's *Journal of ten Months' Residence in New Zealand* (London, 1823); Earle's *Nine Months' Residence in New Zealand, in 1827*, (London, 183 and the work of Busby, above mentioned. The fifth volume of the Library of Entertaining Knowledge, entitled the *New Zealanders*, contains a full and interesting view of the islands and their inhabitants. From the latter work, we take the liberty of extracting the following interesting passage regarding New Zealand and its inhabitants.

In general, the New Zealanders are a tall race of men, many of the individuals belonging to the upper classes being six feet high and upwards. They are also described as strong, active, and almost uniformly well-shaped. Their hair is commonly straight, but sometimes curly: Crozet says he saw a few of them with red hair. Cook describes the females as far from attractive; but other observers give a more flattering account of them. Mr Savage, for example, assures us that their features are regular and pleasing; and he seems to have been much struck by their "long black hair and dark penetrating eyes," as well as "their well-formed figures, the interesting cast of their countenance, and the sweet tone of their voice." Captain Cruise's testimony is almost equally favourable. The dress of the two sexes is exactly the same, and consists of an inner mat or tunic, fastened by a girdle round their waists, and an upper cloak, which is made of very coarse materials for ordinary wear, but is of much finer fabric, and often, indeed, elaborately ornamented, when intended for occasions of display. Both these articles of attire are always made of the native flax, of which we shall immediately give an account. The New Zealanders wear no covering either for the head or the feet, the feathers with which both sexes ornament the head being excepted. The faces of the males are tattoed.

The food upon which they chiefly live is the root of the fern-plant, which grows all over the country. This root, sometimes swallowed entirely, and sometimes only masticated, and the fibres rejected after the juice has been extracted, serves the New landers not only for bread, but even occasionally for a meal by itself. When fish are used, they do not appear, as in many other countries, to be eaten raw, but are always cooked, either by being fixed upon a stick stuck in the ground, and so exposed to the fire, or by being folded in green leaves, and then laid between heated stones to bake. But little of any other animal food is consumed, birds being killed chiefly for their feathers, and pigs being only produced on days of special festivity. The first pigs were left in New Zealand by Captain Cook, who made many attempts to stock the country both with this and other useful animals, most of whom, however, were so much neglected, that they soon disappeared. Cook likewise introduced the potatoe into New Zealand; and that valuable root appears to be now pretty generally cultivated throughout the northern island. The only agricultural implements, however, which the natives possess are of the rudest description; that with which they dig their potatoes being merely a wooden pole, with a cross-bar of the same material fixed to it about three feet from the ground. The labours of agriculture in New Zealand are, in this way rendered exceedingly toilsome, by the imperfection of the only instruments which the natives possess. Hence, principally, their extreme desire for iron. Mr Marsden, in the Journal of his Second Visit, gives us some very interesting details touching the anxiety which the chiefs universally manifested to obtain agricultural tools of this metal.

Taken altogether, New Zealand presents a great variety of landscape, although, even where the scenery is most subdued, it partakes of a bold and irregular character, derived not more from the aspect of undisturbed nature, which still obtrudes itself every where among the traces of commencing cultivation, than from the confusion of hill and valley which marks the face of the soil, and the precipitous eminences, with their sides covered by forests, and their summits barren of all vegetation, or terminating perhaps in a naked rock, that often rises close beside the most sheltered spots of fertility and verdure. If this brokenness and inequality of surface oppose difficulties in the way of agricultural improvement, the variety and striking contrasts thereby produced must be often at least highly picturesque; and all, accordingly, who have visited New Zealand, agree in extolling the mingled beauty and grandeur which are profusely spread over the more favoured parts of the country, and are not altogether wanting even where the general look of the coast is most desolate and uninviting. The southern island, with the exception of a narrow strip along its northern shore, appears to be, in its interior, a mere chaos of mountains, and the region of perpetual winter; but even here, the declivities that slope down towards the sea are clothed, in many places to the water's edge, with [illegible] and evergreen forests; and more protected [illegible] occasionally present themselves, overspread with the abundance of a teeming vegetation, and not to be surpassed in loveliness by what the land [illegible] where else to show. The bleakness of the western coast of this southern island, indeed, does not arise so much from its latitude as from the [illegible] north-west winds which seem so much to prevail in this part of the world, and to the whole force of which it is, from its position, exposed. The interior and eastern side of the northern island owe their fertility and their suitableness for the habitation of man principally to the intervention of a considerable extent of land, much of which is elevated, between them and the quarter from which these desolating gales blow. The more westerly portion of it seems only to be inhabited in places which are in a certain degree similarly defended by the surrounding high grounds. In these, as well as in the more populous districts to the east, the face of the country, generally speaking, offers to the eye a spread of luxuriant verdure, the freshness of which is preserved by continual depositions of moisture from the clouds that are attracted by the mountains, so that its hue, even in the heat of midsummer, is peculiarly vivid and lustrous. Much of the land, both in the valleys and on the brows of the hills, is covered by groves of majestic pine, which are nearly impervious, from the thick underwood that has rushed up every where in the spaces between the trees; and where there is no wood, the prevailing plant is a fern, which rises generally to the height of six or seven feet. Along the skirts of the woodlands flow numerous rivers, which intersect the country in all directions, and several of which are navigable for miles up by ships of considerable burthen. Various lines of communication are in this way established between the opposite coasts of the northern island; while some of the minor streams, that rush down to the sea through the more precipitous ravines, are interrupted in their course by magnificent cataracts, that give additional effect to the other features of sublimity and romantic beauty by which the country is distinguished. Many of the rocks on the coast are perforated,—a circumstance which proceeds from their formation.

The climate of New Zealand, in so far as regards the extremes of heat and cold that are felt in the country, is decidedly temperate. During nearly ten months that Captain Cruise was in the northern island, from about the middle of February to the beginning of December, the general range of the thermometer was between 50° and 75°, nor did it ever descend below 40°, or rise above 80°. The coldest day marked, we believe, is the 4th of July, when it stood at the former elevation; and one of the warmest, the 4th of April, when it rose to within two degrees of the latter. A country thus situated, is placed in the very happiest medium between the torrid and the frigid. The prevalence of stormy weather, especially on the west coast, forms the chief exception to the general excellence of the climate of New Zealand. The quality of the soil of this country may be best estimated from the profuse vegetation with which the greater part of it is clothed, and the extraordinary vigour which characterizes the growth of most of its productions. The botany of New Zealand has as yet been very imperfectly investigated, a very small portion of its native plants having been either classified or enumerated. From the partial researches, however, that have been made by the scientific gentlemen attached to Captain Cook's expeditions, and subsequent visitors, there can be no doubt that the country is rich both in new and valuable herbs, plants, and trees, as well as admirably adapted for the cultivation of many of the most useful among the vegetable possessions of other parts of the world. The New Zealanders had made considerable advances in agriculture even before Captain Cook visited the country; and that navigator mentions particularly, in the narrative of his first voyage, the numerous patches of ground which he observed all along the east coast in a state of cultivation. Since the commencement of the intercourse of the New Zealanders with Europe, the sphere of their husbandry has been considerably enlarged, by the introduction of several most precious articles which were formerly unknown to them. Captain Cook, in the course of his several visits to the country, both deposited in the soil, and left with some of the most intelligent among the natives, quantities of such useful seeds, as those of wheat, pease, cabbage, onions, carrots, turnips, and potatoes; but although he had sufficient proofs of the suitableness of the soil and climate to the growth of most of these articles, which he found that even the winter of New Zealand was too mild to injure, it appeared to him very unlikely that the inhabitants would be at the trouble to take care even of those whose value they in some degree appreciated. With the exception, in fact, of the turnips and potatoes, the vegetable productions which Cook took so much pains to introduce, seem to have all perished. The potatoes, however, have been carefully preserved, and are said to have even improved in quality, being now greatly superior to those of the Cape of Good Hope, from which the seed they have sprung from was originally brought. In more recent times, maize has been introduced into New Zealand; and the missionaries have sown many acres in the neighbourhood of the Bay of Islands, both on their own property and on that of the native chiefs, with English wheat, which has produced an abundant return.

Of the lofty forests of New Zealand, considered as a mere ornament to the country, all who have seen them speak in terms of the highest admiration. Mr Anderson (the surgeon whom Cook took with him on board the Resolution in his third voyage) describes them as "flourishing with a vigour almost superior to anything that imagination can conceive, and affording an august prospect to those who are delighted with the grand and beautiful works of nature." "It is impossible," says Mr Nicholas, "to imagine, in the wildest and most picturesque walks of nature, a sight more sublime and majestic, or which can more forcibly challenge the admiration of the traveller, than a New Zealand forest." And indeed, when we are told that the trees rise generally to the height of from eighty to a hundred feet, straight as a mast and without a branch, and are then crowned with tops of such umbrageous foliage, that the rays of the sun, in endeavouring to pierce through them, can hardly make more than a dim twilight in the lonely recesses below, so that herbage cannot grow there, and the rank soil produces nothing but a thick spread of climbing and intertwisted underwood, we may conceive how imposing must be the gloomy grandeur of these gigantic and impenetrable groves. In the woods in the neighbourhood of Poverty Bay, Cook says he found trees of above twenty different sorts, altogether unknown to any body on board; and almost every new district which he visited, afterwards presented to him a profusion of new varieties. Among those which the natives principally make use of, are the *henow*, from which they extract a black dye, and the *vow*, a species of cork tree. But the trees that have as yet chiefly attracted the attention of Europeans, are certain of these more lofty ones of which we have just spoken. These trees had attracted Cook's attention in his first voyage, as likely to prove admirably adapted for masts, if the timber, which in its original state he considered rather too heavy for that purpose, could, like that of the European pitch-pine, be lightened by tapping; they would then, he says, be such masts as no country in Europe could produce. Crozet, however, asserts, in his account of Marion's voyage, that they found what he calls the cedar of New Zealand to weigh no heavier than the best Riga fir. Of late years the attention of our own government has been turned to the capabilities of this wood, and its entire suitableness for the most important purposes of ship-building has been sufficiently ascertained. It was in order to obtain a cargo of spars for top-masts that the Dromedary, in which Captain Cruise sailed, was directed to proceed to New Zealand, in 1820. This ship had already been provided with a fore-top-gallant-mast of New Zealand timber, which had been brought to England by the Catharine whaler, and of which Captain Cruise says, "it was well tried during its return to its native country, and proved itself to be, in seamen's phrase, a *stick* of first-rate quality."

According to Captain Cruise there are two kinds of trees known in New Zealand, which are fit for masts for large ships; the one of which is called by the natives *kaikaterre*, the other *cowry* or *cowdie*. They both grow to an immense height without a branch; but the cowry seems to be the tallest, and is also to be preferred on other accounts. It is not, however, so easily procured as the other, being to be sought for frequently on the tops of the highest hills, from which it is scarcely possible to get it conveyed to the seaside; whereas the kaikaterre is found generally in low swampy ground, often on the banks of rivers, so that little difficulty, of course, is experienced in bringing it on board. It was the cowry which the Dromedary was directed, if possible, to procure; but she was obliged at last to come home with a cargo of the other timber, the cowry forests being found to be at too great a distance from any place of embarkation in the Bay of Islands, to make it practicable for the spars to be conveyed to the ship; and the Captain having declined to go up the Shukehanga river, the banks of which were ascertained to be clothed with that tree, from an apprehension of not being able to pass the bar which lies across its mouth. It has since been stated in the *Quarterly Review*, that the spars brought from New Zealand have been "found on trial to be of equal gravity with Riga spars, and to possess a greater degree of flexibility, as well as of strength, than the very best species of fir procured from the north." "The wood of this tree," (the cowry,) it is added, "is much finer grained than any timber of the pine tribe; and the trunks are of such a size as to serve for the main and fore-top-masts of the largest three-deckers." In a note, it is said, "the Prince Regent of one hundred and twenty guns is supplied with them; they have also been used in sea-going ships, and the reports of their qualities are most favourable." The same writer also informs us, that the cowry, "though coniferous, is not allied to the pine tribe, but is a species of the genus which Rumphius describes under the name of Damanara, which affords the pitch or resin used by the natives of the Oriental Archipelago, and which is of a different genus from that tree which in India produces the dammer."

The only other vegetable production of New Zealand which we can afford to notice, as one that has of late attracted a great deal of attention, both in this country and in other parts of Europe—we mean the plant from which the natives fabricate not only their fishing lines and nets, and such other cordage as they require, but also the cloaks, or mats, as they have been somewhat improperly called, which form their clothing. This plant is repeatedly noticed by Cook; and Mr Anderson describes the flax produced from it as of a silky fineness, and superior to any thing we possess. In the neighbourhood of Queen Charlotte's Sound, in the southern island, it grows, he says, everywhere near the sea, and in some places a considerable way up the hills, springing up from the earth in bunches or tufts, with sedgelike leaves, and bearing on a long stalk, yellowish flowers, which give place to long roundish pods, filled with very thin, shining, black seeds. This is very nearly the description of it given by Mr Nicholas, who saw it in the northern island, where he found it flourishing with equal luxuriance in the most exposed as in the most sheltered situations, and growing to the height of from five to seven feet. It bears a strong resemblance, he says, to our common flag, only that the stem is much thicker, and the flowers less expanded, and of a red colour. It belongs to the genus to which Linnæus gives the name of Phormium; and seven varieties of it have already, it seems, been discovered in New Zealand. Of these, one is particularly described as remarkable for the facility with which its boon, or useless vegetable matter, admits of being separated from the fibres. Fibre of a peculiarly silky lustre and softness is also said to be produced from another species, which is understood to grow in the more southern parts of the country. Valuable, however, as is the phormium for the purposes to which alone it is applied in New Zealand, it would appear that the attempts which have been made to fabricate from it what is properly called cloth, have not hitherto been attended with a favourable result. Some years ago, a quantity of hemp that had been manufactured from the plant at Sydney, in New South Wales, was sent to be woven at Knaresborough; but "the trial," it is stated, "did not succeed to the full satisfactiou of the parties."

Among the useful plants for which we are indebted to New Zealand, is the summer spinach (*tetragonia expansa*—Murray), which was discovered in Cook's first voyage by Sir Joseph Banks, and was "boiled and eaten as greens" by the crew. It was afterwards seen by Forster at Tongataboo, though it was not used by the natives; but Thunberg found the Japanese acquainted with its value as a pot-herb. It was introduced into Kew Gardens in 1772; but the first account of it as a vegetable worthy of cultivation, was published by Count D'Auraches in the Annales d'Agriculture for 1809. Its chief advantage lies in the leaves being fit for use during the summer, even in the driest weather, up to the setting in of the frosts, when the common spinach is [illegible]; but it is not reckoned of so fine a flavour as that plant. The Rev. J. Bransby says, that the produce of three seeds (which must be reared by him before planting out) supplied his own table, and those of two of his friends, from June till the frost killed it. The plants should be six feet asunder, and, to save room, planted on ridges two feet high.

As yet, the mineralogy of New Zealand has been as imperfectly investigated as its botany. A blue pigment, which the natives make use of to paint their faces, appears to be manganese. They also, as has been already mentioned, make certain of their weapons, and carving tools, of a green talc, or [illegible] stone, which is found only in the southern island, and, at least, before they became acquainted with iron, used to be accounted by themselves a very precious article. Captain Cook remarked, on his first visit, the great quantities of iron-sand which were brought down to the shore by every little rivulet of fresh water from the interior, and regarded the fact as a demonstration that there was ore of that metal not far inland. Mr Nicholas, while in the country, procured one or two pieces of pumice stone, which the natives made use of in polishing their spears, and likewise some obsidian or volcanic glass; but he seems to think that these substances are not produced in New Zealand; although, in that case, it would not be easy to conceive where the inhabitants could have obtained them.

The native land animals of New Zealand are not numerous. The most common is said to be one resembling our fox-dog, which is sometimes eaten for food. It runs wild in the woods, and is described by Mr Savage as usually of a black and white skin, with pricked up ears and the hair rather long. But it may perhaps be doubted if even this quadruped is a native of the country. There are in New Zealand a few rats, and bats; and the coasts are frequented by seals of different species. One of the natives told Captain Cook that there was in the interior a lizard of eight feet long, and as thick as a man's body, which burrowed in the ground, and sometimes seized and devoured men. This animal, is probably an alligator.

There are not many species of insects, those seen by Mr Anderson, who accompanied Cook, being only a few dragon-flies, butterflies, grasshoppers, spiders, and black ants, vast numbers of scorpion flies, and a sand-fly which is described as the only noxious insect in the country. It insinuates itself under the foot, and bites like a mosquito.

The birds of New Zealand are very numerous, and almost all peculiar to the country. Among them are many sorts of wild ducks, large wood-pigeons, sea-gulls, rails, parrots, and paroquets. They are generally very tame. Rutherford states, that during his long residence he became very expert, after the manner of the natives, in catching birds with a noosed string, and that he has thus caught thousands of ground parrots with a line about fifty feet long. The most remarkable bird is one to which Cook's people gave the name of the mocking-bird, from the extraordinary variety of its notes. There is also another which was called by the English the poe, or poi bird, from a little tuft of white curled feathers which it has under its throat, and which seemed to them to resemble certain white flowers worn as ornaments in the ears by the people of Otaheite, and known there by a similar name. This bird is also remarkable both for the beauty of its plumage and the sweetness of its note. Its power of song is the more remarkable as it belongs to the class of birds which feed on honey, whose notes are generally not melodious.

One of the chief sources of natural wealth which New Zealand possesses, consists in the abundance and variety of the fish which frequent its coasts. Wherever he went, Captain Cook, in his different visits to the two islands, was amply supplied with this description of food, of which he says, that six or eight men, with hooks and lines, would in some places catch daily enough to serve the whole ship's company. Among the different species which are described as being found, we may mention mackerel lobsters, crayfish, a sort called by the sailors cole fish, which Cook says was both larger and finer than any he had seen before, and was in the opinion of most on board, the highest luxury the sea afforded them; the herring, the flounder, and a fish resembling the salmon. To these may be added, besides many other species of shell-fish, mussels, cockles, and oysters. The seas in the neighbourhood of New Zealand also, we ought not to forget to add, are much frequented by whales, which, besides the value of their blubber, are greatly prized by the natives for the sake of their flesh, which they consider a first-rate delicacy. The New Zealanders are extremely expert in fishing. They are also admirable divers, and will bring up live fish from the deepest waters, with the greatest certainty. The hooks and other implements for fishery, which they make of bone, are of various forms.

The first and most conspicuous quality in the character of the New Zealanders, is their inordinate passion for war. The wars of these savages are maintained and perpetuated both by their love of contention and bloodshed, and by that spirit of revenge which seems to be more implacable in them than in almost any other people on earth. The law of retaliation in its most rigorous literality is their only rule for reconcilement of differences; and so long as the demands of this inexorable principle remain unsatisfied, the two parties can only know each other as enemies. "When we ask the chiefs," writes one of the missionaries in 1827, "when their wars with each other will terminate, they reply, 'never; because it is the custom of every tribe which loses a man, not to be content without satisfaction: and nothing less than the death of one individual can atone for the death of another.'" Many other barbarous nations continue in a state of war, for no weightier reasons. And in truth many of the wars among civilized nations have originated in no more rational object; and whether the pretext has been to maintain a tottering dynasty, or to keep possession of a useless territory, the real object has been the indulgence of national animosity.

The courage of the New Zealanders, though, in a fair field, of the most fearless description, and implying extraordinary indifference to danger and death, it is nevertheless mixed up with a spirit of bravado, which may seem to our notions nearly as inconsistent an accompaniment of that quality, as the ferocity and cruelty by which, among this people, its lustre is also so considerably impaired. But we must not expect from savages the refinement, either in this or any other feeling, which can only be taught by a long habit of subduing natural emotion and of withholding their expression, by reflections, and out of deference to the customs and sentiments of a polished state of society. In the New Zealand warrior the hatred or contempt for his enemy, of which his heart is full, speaks out in every word, tone, and gesture. He defies him to the combat with every contortion of limb and countenance that he can think of most significant of mockery and insult; and after he has vanquished and slain him he vents the residue of his rage and scorn in a profusion of indignities on his dead body. His notion of strength and courage expresses itself with the same coarse frankness on every occasion. If he deems himself to be more powerful or more valorous than another man, he is very likely to insult him for the mere sake of displaying his superiority.

The New Zealanders, as is well known, eat those enemies who are slain or taken in battle, all but the head, which is smoked and preserved as a trophy of war. The eating of human flesh among this people is not merely an occasional excess, prompted only by the phrenzy of revenge, but it is actually resorted to as a gratification of appetite, as well as of passion. It is very probable, however, that the practice may have had its origin in these vindictive feelings which mix, to so remarkable a degree, in all the enmities and wars of these savages. This is a much more likely supposition than that it originated in the difficulty of procuring other food; in which case, as has been remarked, it could not well have, at any time, sprung up either in New Zealand or in almost any other of the countries in which it is known to prevail. Certain superstitious notions, besides, which are connected with it among the people, sufficiently indicate the motives which must have first led to it; for they believe that, by eating their enemies, they not only dishonour their bodies, but consign their souls to perpetual misery. This is stated by Cook. Other accounts, which we have from more recent authorities, concur in showing that the person who eats any part of the body of another whom he has slain in battle, fancies he secures to himself thereby a portion of the valour or good fortune, which had hitherto belonged to his dead enemy. The most common occasion too, on which slaves are slain and eaten, is by way of an offering to the manes of a chief or any of his family who may have been cut off in battle.* A.

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* It was my lot (says Mr Earle) to behold cannibalism in all its horrors. One morning about eleven o'clock, after I had just returned from a long walk, captain Duke informed me he had heard, from very good authority (though the natives wished to keep it a profound secret), that in the adjoining village, a female slave named Matowe had been put to death, and that the people were at that very time preparing her flesh for cooking. At the same time he reminded me of a circumstance which had taken place the evening before. Atoi had been paying us a visit, and, when going away, he recognised a girl who, he said, was a slave that had run away from him; he immediately seized hold of her, and gave her in charge to some of his people. The girl had been employed in carrying wood for us. Atoi's laying claim to her had caused us no alarm for her life, and we had thought no more on the subject; but now to our surprise and horror, I heard this poor girl was the victim they were preparing for the oven! Captain Duke and myself immediately resolved to witness this dreadful scene. We therefore kept our information as secret as possible, well knowing that if we had manifested our wishes, they would have denied the whole affair. We set out, taking a circuitous rout towards the village, and being well acquainted with the road, we came upon them suddenly, and found them in the midst of their abominable ceremonies. On a spot of rising ground, just outside the village, we saw a man preparing a native oven, which is done in the following simple manner:—A hole is made in the ground, and hot stones are put within it, and then all is covered up close. As we approached we saw evident signs of the murder which had been perpetrated; bloody mats were strewed around, and a boy was standing by them actually laughing; he put his finger to his head, and then pointing towards a bush. I approached the bush, and there discovered a human head. My feelings of horror may be imagined as I recognised the features of the unfortunate girl I had seen forced from our village the preceding evening! We ran towards the fire, and there stood a man occupied in a way few would wish to see. He was preparing the four quarters of a human body for a feast; the large bones having been taken out, were thrown aside, and the flesh being compressed, he was in the act of forcing it into the oven. While we stood transfixed by this terrible sight, a large dog, which lay before the fire, rose up, seized the bloody head, and walked off with it into the bushes; no doubt to hide it there for another meal! The man completed his task with the most perfect composure, telling us, at the same time, that the repast would not be ready for some hours! Here stood captain Duke and myself, both witnesses of a scene which many travellers have related, and their relations have invariably been treated with contempt; indeed, the veracity of those who had the temerity to relate such incredible events, has been every where questioned. In this instance it was no warrior's flesh to be eaten; there was no enemy's blood to drink, in order to infuriate them. They had no revenge to gratify; no plea could they make that their passions having been roused by battle, nor the excuse that they eat their enemies to perfect their triumph. This was an action of unjustifiable cannibalism. Atoi, the chief, who had given orders for this cruel feast, had only the night before sold us four pigs for a few pounds of powder; so that he had not even the excuse of want of food. After captain Duke and myself had consulted with each other, we walked into the village, determined to charge Atoi with his brutality. Atoi received us in his usual manner; and his handsome open coun-

this would go to prove that the cannibalism of the New Islander had, on its first introduction, been intimately associated with certain feelings or notions which seemed to demand the act as a duty, and not at all with any circumstances of distress or famine which compelled a resort to it as a dire necessity. There is too much reason for apprehending, however, that the unnatural repast, having ceased in this way to be regarded with that disgust with which it is turned from by every unpolluted appetite, has now become an enjoyment in which they not unfrequently indulge without any reference to the considerations which originally tempted them to partake of it. Indeed, such a result, instead of being incredible or improbable, would appear to be almost an inevitable consequence of the general and systematic perpetration, under any pretext, of so daring an outrage upon nature, as that of which these savages are, on all hands, allowed to be guilty.

Unacquainted as the New Zealanders are with anything deserving of the name of science, and insignificant as is the progress they have made in the arts, their intellectual powers are evidently of a superior order. Such of them as have come in contact with European civilization have in general manifested extraordinary quickness and tact in catching its spirit, and adapting themselves to the new opinions and manners to which they were introduced. And all that we are told of them shows acuteness, reflection, readiness, fertility of resources, and the other faculties and habits of mind that go to make up a commanding intellectual organization. In the few arts which are known among them, they display exceeding neat-handedness and ingenuity, and even no contemptible portion of taste and elegance. Nor are they without a genius for the higher exercises of the imagination. Their music is spoken of as superior to that of many of the other South Sea Islands; they possess a body of national poetry, which is constantly receiving additions as new events awaken the fancy of their bards; and eloquence in the council is as indispensible a qualification of their chiefs and warriors as valour in the field. Among all orders of the people much time is spent in conversation, in which they discuss the general concerns of the tribe, taking, as might be expected, especial interest, in whatever relates to their chief and his family. But other topics also obtain their eager attention, whenever they enjoy the rare opportunity of acquiring any information respecting what lies beyond the very bounded sphere of their own experience and traditionary knowledge. Mr Marsden, who, during his several journeys through the interior of the country, saw more of their domestic habits than any one else who has attempted to give us a picture of New Zealand society, found them every where both ready and anxious to listen to him, when he addressed them even on what may be called scientific subjects, and most intelligent in the questions they asked him, and the remarks they made. After the work of the day was over, they used to crowd around him in the evenings, to hear him dispense to them the wisdom of Europe; and not only agriculture and navigation, but the general principles of geography and astronomy were often the matter of his discourse, which would sometimes run far into the night before his auditors were weary, or thought of repose. Nor was it found by any means impossible or difficult to convince them of the folly of some of their prejudices, when the reason of the thing admitted of being plainly stated to them. They are much less disposed, however, than most other uncivilized tribes, and the fact is greatly to the credit of their thinking powers, to receive any opinion merely upon the assertion even of a white man. Upon all subjects they question and cross-question those who attempt to instruct them, until they are satisfied with the explanation given. Naturally suspicious, a consequence partly of the inquisitive and penetrating character of their understandings, and much accustomed themselves to conceal the object they actually have in view, and to proceed to it by an indirect course, they generally endeavour very anxiously, when they meet with a stranger, to acertain the motives of any conduct they see him pursue.

Several of the most conspicuous deformities of the New Zealand character originate in the abuse and perversion of intellectual powers, which, properly trained, would carry them forward rapidly in the career of social improvement and happiness. They are not a people sunk in sloth, and abandoned to an enervating luxury, as has been found to be

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nance could not be imagined to belong to so savage a monster as he had proved himself to be. I shuddered at beholding the unusual quantity of potatoes his slaves were preparing to eat with the infernal banquet. We talked coolly with him on the subject: for as we could not prevent what had taken place, we were resolved to learn, if possible, the whole particulars. Atoi at first tried to make us believe he knew nothing about it, and that it was only a meal for his slaves; but we had ascertained it was for himself and his favourite companions. After various endeavours to conceal the fact, Atoi frankly owned that he was only waiting till the cooking was completed to partake of it. He added, that knowing the horror we Europeans held these feasts in, the natives were always most anxious to conceal them from us, and he was very angry that it had come to our knowledge; but, as he had acknowledged the fact, he had no objections to talk about it. He told us that human flesh required a greater number of hours to cook than any other; that if not done enough, it was very tough, but when sufficiently cooked, it was as tender as paper. He held in his hand a piece of paper which he tore in illustration of his remark. He said the flesh then preparing would not be ready till next morning; but one of his sisters whispered in my ear that her brother was deceiving us, as they intended feasting at sunset. We inquired why and how he had murdered the poor girl. He replied, that running away from him to her own relations was her only crime. He then took us outside the village, and showed us the post to which she had been tied, and laughed to think how he had cheated her:—'For,' said he, 'I told her I only intended to give her a flogging; but I fired, and shot her through the heart!' My blood ran cold at this relation, and I looked with feelings of horror at the savage while he related it. Shall I be credited when I again affirm, that he was not only a handsome young man, but mild and genteel in his demeanour? He was a man we had admitted to our table, and was a general favourite with us all, and the poor victim to his bloody cruelty was a pretty girl of about sixteen years of age! While listening to this frightful detail, we felt sick almost to fainting. We left Atoi, and again strolled towards the spot where this disgusting mess was cooking. Not a native was now near it: a hot fetid steam occasionally bursting from the smothered mass; and the same dog we had seen with the head now crept from beneath the bushes, and sneaked toward the village; to add to the gloominess of the whole, a large hawk rose heavily from the very spot where the poor victim had been cut in pieces. My friend and I sat gazing on this melancholy place; it was a lowering gusty day, and the moaning of the wind through the bushes, as it swept round the hill on which we were, seemed in unison with our feelings. After some time spent in contemplating the miserable scene before us, during which we gave full vent to the most passionate exclamations of disgust, we determined to spoil this intended feast; this resolution formed, we rose to execute it. I ran off to my beach, leaving Duke on guard, and, collecting all the white men I could, I informed them of what had happened, and asked them if they would assist in destroying the oven, and burying the remains of the girl; they consented, and each having provided himself with a shovel or a pick-axe, we repaired in a body to the spot. Atoi and his friends had by some means been informed of our intention, and they came out to prevent it. He used various threats to deter us, and seemed highly indignant; but as none of his followers seemed willing to come to blows, and seemed ashamed that such a transaction should have been discovered by us, we were permitted by them to do as we chose. We accordingly dug a tolerably deep grave; then we resolutely attacked the oven. On removing the earth and leaves, the shocking spectacle was presented to our view,—the four quarters of the human body half roasted. During our work clouds of steam enveloped us, and the disgust created by our task was almost overpowering. We collected all the parts we could recognize: the heart was placed separately, we supposed, as a savoury morsel for the chief himself. We placed the whole in the grave, which we filled up as well as we could, and then broke and scattered the oven.

the condition of some savage tribes. On the contrary, although full of sensibility and warmth of heart, their chief enjoyment is in activity and enterprise—in the toils, the dangers, and the other coarse but stirring excitements of war. From this active, restless, and ardent constitution of mind, however, spring many of their vices, as well as their virtues—not only their hardihood, and exemption from effeminacy, but their turbulence, their ferocity, their love of blood, and whatever else is in the popular sense of the word most *savage* in their disposition and manners. With less intellectual acuteness and energy, they would be in many respects less revoltingly barbarous. Their cunning, also, would be less refined and insidious; and they would not be so much given to suspicion, jealousy, dissimulation, lying, and calumny. On the other hand, the New Zealanders owe to this quickness, penetration, and flexibility of mind, some of their best and most promising qualities. Instead of the stupid indifference which many other rude nations show, in regard to matters in which they have not been accustomed to take an interest, curiosity is one of the strongest passions of the people. Toils and endurances of every description many of them have undergone, in order to view with their own eyes those wonders of distant lands, of which they had merely heard in the relations of others. No greater zeal, at least, and spirit of enterprise have been displayed by the travellers and voyagers of the most enlightened nations.

In New Zealand, it does not appear that the men are in the habit, as in some barbarous countries, of devolving the common toils of life exclusively upon the women. The latter seem to be far removed, for example, from that state of subjection and wretchedness which is described as their lot among many of the African, and even among some of the American savages. In most of their labours the men take at least some share, although perhaps not quite an equal one. Of one important duty, however, the husband relieves the wife almost completely—namely, of the care of the children. As soon as the infant is weaned, it is taught to twine its arms round its father's neck; and so completely does it in a short time acquire the habit of trusting to this support, that, asleep or awake, it remains the whole day thus suspended, protected from the weather by the same mat which covers its parent; and in his longest journeys as well as his most laborious occupations, it is his constant companion. Almost all the chiefs have more than one wife, most of them six or eight; of these there is one who is accounted the head wife.

The head wives of the chiefs seem in many cases to enjoy considerable consequence, and women are sometimes chiefs themselves; one in particular is mentioned as queen of a large interior district to the south of the Thames: but still they are under many restraints from which their husbands are free. Among others they are not permitted to marry again should their husbands die; and if this regulation is disregarded by them, as it sometimes is, they are exposed to many indignities which render life hardly endurable. They are generally given in marriage, too, without their own consent being even asked, many of them being in fact prisoners of war; and even the head wife, who is generally her husband's equal in rank, is merely delivered over to him by her father. Yet even in these unfavourable circumstances a warm attachment often grows up between the parties; and the death of one is lamented with passionate sorrow. The wife is not enjoined, as among the Hindoos, to devote herself on the funeral pile of her husband by any doctrine of the national religion, nor is it even expected that she should give such a proof of her affection; yet it is by no means unusual for her on occasion of her husband's death to commit suicide, in order that her spirit may follow him. In New Zealand, as in others of the South Sea islands, it is only after a woman, by being married, becomes an article of property, that she is considered as guilty of any impropriety in acting as licentiously as she chooses. Yet it is said to be surprising how few instances of misconduct occur on the part of the females after marriage, notwithstanding this extraordinary training. Both parents are in general fondly attached to their children, and treat them with great kindness and indulgence. The children, indeed, are alleged to be in general spoiled, and rendered unmanageable by the over-indulgence of the parents; and, doubtless, few of them enjoy the benefit of a very wise corrective discipline. They have also, of course, by right of birth, their share of the audacity and wildness of the intrepid, turbulent, and reckless race to which they belong. No wonder, therefore, that we find them characterized as idle, unsteady, wilful, despising at times even the control of their parents, and, of course, still more difficult to be managed by any one else. But, on the other hand, this comparative freedom from restraint in which they are brought up, among its many evil effects, is not without some advantages. Not only is their whole bearing to an extraordinary degree frank and free from embarrassment; but, in many respects, their intelligence at a very early age surpasses that of the generality of European children. Almost as soon as they leave their mother's breast, their fathers take them with them to the public assemblies, and even on their military expeditions. Hence they acquire a familiarity even with what may be called affairs of state, at an age when children with us are considered hardly more than ready to be sent to school. Mr Marsden tells us that he has often seen the sons of chiefs, at the age of four or five years, sitting among the chiefs, and paying the closest attention to what was said. At the age of eight or ten years, he adds, they appear to be initiated in all the national customs and manners. The first lessons taught them are to dance the war-dance, to paddle the canoe, and to use the warlike instruments of their country. The son of a great chief is expected to show his prowess in battle at a very early age, if he means to emulate his father's renown; and Captain Cruise mentions that Shungie's son, Repero, had acquired no little ascendancy in his tribe, by having shot a man before he attained his fourteenth year.

The language of the New Zealanders is radically the same with that spoken in Otaheite, in the Sandwich group, and in many other islands of the South sea. Its principal characteristic is the simplicity of its grammatical forms: it has no distinction of gender; declension and conjugation are effected, as in English, by particles, and superlatives are made by reduplication. A Grammar and Vocabulary of the Language of New Zealand, compiled by professor Lee of Cambridge, was published by the church missionary society, in 1820. The English alphabet is used in this work, but is much less suitable for that purpose than the Indian alphabet of Mr Pickering (of which an account is given in our article *Writing*).

ZEALOTS, among the Jews; those who were zealous for the honour of God and his temple, and not unfrequently went so far that they stoned, or otherwise destroyed, supposed blasphemers, or Sabbath-breakers.

ZEBRA. See *Horse*.

ZECCHIN (in Italian, *zechino*, from *zecca*, the mint where the money is coined); the gold coin of the former republic of Venice. Certain gold coins of other countries, such as the papal dominions, some other Italian states, and Turkey, are also called *zecchins*. The Florentine *zecchins* are called *gigliati*, from the lilies of the grand-ducal arms impressed on them; and the Austrian *zecchins*, or ducats, particularly those of Cremnitz (q. v.), are called, in Italy, *ungheri*. The Venetian *zecchins* were equal to the Hungarian ducats in actual value, but stood from four to five per cent. higher in Venice. The Italian ducat, a silver coin, is to be distinguished from the *zecchin*. Gold ducats are rarely coined in Italy.

ZECHARIAH, OR ZACHARIAH; one of the twelve minor prophets, of whose history little is known. We are ignorant both of the time and the place of his birth. He is called the son of Barachiah, and was commissioned by God to exhort the Jews to undertake the restoration of the temple. Like the other prophets, he also preaches moral reformation. His obscurity has much embarrassed his numerous commentators.

ZEGEDIN, OR SZEGEDIN; a royal free town of Hungary, in Csongrad, near the conflux of the rivers Maros and Theisse; 60 miles north-west of Temeswar, 68 north of Belgrade; lon. 9° 56′ E.; lat. 46° 15′ N.; population, 32,000; houses, 3800. It is surrounded by a mound and moat, has a brick fort, is one of the most considerable towns in Hungary, and contains a college of the monks called Piarists, a Catholic gymnasium, a small philosophical seminary, a monastery of Minorites, and several Catholic and Greek churches. It has some manufactures of woollens, leather and toys. Its commercial intercourse is considerable, its position, at the junction of two navigable rivers giving it the command of an extensive water carriage. The exports consist chiefly of corn, cattle, wool, tobacco and timber.

ZEISBERGER, DAVID, a missionary among the Indians, distinguished by his zeal in religious labours, and by the services which he has rendered to general philology, was born in Moravia, a province of Austria, whence he emigrated, when young, with his parents, to Herrnhut, in Upper Lusatia, for the sake of obtaining religious liberty. In 1738, he went to America, and landed in Georgia, where, at that time, some of the United Brethren had begun a settlement for the purpose of preaching the gospel to the Creek nation. Thence he removed to Pennsylvania, and assisted at the commencement of the settlements of Bethlehem and Nazareth. From 1746 to his death, which took place Nov. 17, 1808 (when he was eighty-seven years and seven months old), a period of sixty-two years, he was, with very few and short intervals, a missionary among the Indians, and made himself master of several of their languages. Those Indians among whom he lived loved him, and often referred decisions, even respecting disputes among different tribes, to him. He required no salary, wanting nothing but food and clothing, and liberty to preach the gospel. He was one of the oldest white settlers in the state of Ohio, and there, and in Upper Canada, dwelt with the Indians, who had given him the name of *Anausseracheri* (signifying *On-the-pumpkin*), with whom he endured the greatest hardships. He was chiefly acquainted with two Indian languages, the Onondago (one of the idioms of the Six Nations) and the Delaware, but understood other languages connected with them. In the Onondago he completed, about the year 1768, two grammars, one written in English and the other in German, and a copious dictionary (German and Indian), containing upwards of one thousand seven hundred pages. In the language of the Lenape (or Delaware), he published, in the year 1776, his first edition of a spelling-book, and, in 1806, his second edition, enlarged. Two other books were published by him in this language, the one sermons to children, and the other a hymn-book, containing about three hundred and sixty pages, and upwards of five hundred hymns, translated partly from the English, partly from the German. He left, in manuscript, a grammar of the Delaware language, written in German, which has been translated into English for the American Philosophical Society of Philadelphia, by Mr Duponceau, and which the distinguished and learned translator pronounces to be the most complete grammar that we have ever had of any one of those languages which are called barbarous (see *Indian Languages*), and also a translation into Delaware of the Harmony of the Four Gospels. Mr Zeisberger's works are so important to the students of the particular dialects which he had learned, and afford so valuable materials to the general philologist, that we think it proper to add the titles of them, as they are enumerated in the Catalogue annexed tc Mr Duponceau's Report to the American Philosophical Society, in whose library they are deposited: *Deutsch und Onondagoisches Wörterbuch*; a Dictionary of the German and Onondago Languages (7 vols., 4to., MS.): a Grammar of the Lenni Lenape or Delaware Language (translated from the German MS. of the author by P. S. Duponceau, since published in the Transactions of the Philosophical Society at Philadelphia); Essay of an Onondago Grammar, or a short Introduction to learn the Onondago, alias Maqua, Tongue (4to., 67 pp., MS.); *Onondagoisches Grammatik* (4to., 87 pp., MS.); another Onondago Grammar (in the German language, 4to., 176 pp., MS.) See a *Narrative of the Mission of the United Brethren among the Delaware and Mohegan Indians, from its Commencement in* 1740, *to* 1808, by John Heckewelder (Philadelphia, 1820).

ZEIST. See *Zeyst*.

ZEITZ; formerly a Saxon city, but which since 1815, has belonged to Prussia. It is about twenty-three miles distant from Leipsic, on the right bank of the White Elster, on a high mountain, contains 7000 inhabitants, manufactories of cloth, leather, &c. The town is very old, has four churches, and a gymnasium, a house of correction, an institution for the reformation of juvenile offenders, a good library with 12,000 volumes and many manuscripts. The former bishopric of Zeitz was founded by the emperor Otho I., in 968, in order to promote the conversion of the Wends to Christianity. In 1029, the bishops transferred their see to Naumburg.

ZELLE, OR CELLE; a city of Hanover, in Luneburg, 128 miles west of Berlin; lon. 10° 14′ E.; lat. 53° 42′ N.; population, including the suburbs, 9729. It contains five churches, two hospitals, a gymnasium, an orphan-house, a lunatic hospital, a school of surgery, a society of agriculture, &c. It is fortified, and tolerably built, situated on the Aller, which is here navigable, and, behind the New Town, is joined by the Fuhsee, and has some trade and manufactures. It contains the courts of appeal for the Hanoverian territory at large. It was formerly the capital of a duchy belonging to the house of Brunswick.

ZELTER, Charles Frederic, professor and director of the singing academy in Berlin, a man of much musical talent, was born in 1758, in Berlin. In his seventeenth year, he began to learn the trade of his father, a mason. All his leisure, however, was given to music. Bach's and Hasse's works first made him acquainted with the rules of scientific composition. At last his father forbade him the study of music altogether, because he neglected his trade. In 1783, he became a master mason. Being now independent, he became an active member of the singing academy above mentioned, of which he was made director in 1800. In 1809, he was made professor of music in the Berlin academy of arts and sciences, and founded the first *Liedertafel* (glee club) in Berlin. From this glee club numerous others proceeded in Germany, to which the amateurs of music are indebted for many beautiful tunes and songs. He composed many glees for this club. He also composed other music; but his glees and motetts are his best productions. He did much towards improving vocal music in Berlin, a city perhaps superior to any in respect to the general diffusion of fine singing. His death took place in 1832.

ZEMLIN. See *Semlin.*

ZEMZEM. See *Mecca.*

ZEND-AVESTA (*Living Word*) is the name of the sacred books which the descendants of the ancient Persians, the Guebers in Persia, and the Parsees in India, assert that they received, more than four thousand years ago, from their lawgiver, and the founder of their religion, Zoroaster, or Zerdusht. English and French travellers, at an early period, gave some information respecting the religion of the Guebers and their sacred books. Anquetil du Perron learned, during his residence in India, the sacred language in which those books are written, brought copies of them to Europe in 1762, and published, in 1771, a French translation of the *Zend-Avesta*. English and German scholars soon raised doubts respecting the genuineness and antiquity of these writings, which occasioned disputes. Even the fire-worshippers themselves are said to have admitted that the real *Zend-Avesta* has long been lost. Their present books are said to be legends of the middle ages, and the religion of the present Guebers a mixture of ancient Greek, Christian, and perhaps even Mohammedan notions. Rask, however, in his treatise On the Age and Genuineness of the Zend Language and of the Zend-Avesta (translated into German by Hagen; Berlin, 1826), maintains the genuineness of the *Zend-Avesta*, at least of some parts; but who is the author he does not decide. The *Zend-Avesta* consists of five books, written in the Zend language. A part of it was revealed to Zoroaster by Ormuzd, the highest among good beings. They treat of Ormuzd, and of the antagonist principle of evil, Ahriman; also of the genii of heaven (the angels), the rewards and punishments of a future state, &c., and are read aloud during religious service. Another part consists of a collection of prayers, glorifications of the most important genii, moral sentiments, &c. These are by various authors, and written in various dialects. There are also historical and geographical notices contained in these books, which, however, seem to be capable of various interpretations. Respecting the contents of the Zend writings, see Rhodes's work, *The Sacred Traditions and the complete Religious System of the ancient Bactrians, Medians and Persians, or of the Zend People* (Frankfort on the Maine, 1820). The great work of M. Burnouf, secretary of the Asiatic society in Paris, throws much light on this subject.

ZENITH; an Arabic word, used in astronomy to denote the vertical point of the heavens, or that point of the heavens directly over the head of the observer. Each point on the surface of the earth has therefore its corresponding zenith. The zenith is called the "pole of the horizon," as it is 90° distant from every point of that circle. See *Nadir*.

The *zenith distance* of a heavenly body is the arc intercepted between the body and the zenith, being the same as the co-altitude of the body.

ZENO; a name which often appears in ancient history. Two philosophers of this name are particularly celebrated:—

1. Zeno, the Eleatic, of Elea, or Velia, a Greek colony in Magna Græcia, lived about the eightieth Olympiad (about 450 B. C.), at which time he went with Parmenides to Athens. He was a disciple of the Eleatic school, founded by Xenophanes. To him is ascribed the invention, or at least the developement, of dialectics, of which he made use with much acuteness for the defence of the Eleatic system. Of his writings, nothing has come down to us. According to Aristotle, he taught that there is only one being, which is God; that in nature there is no vacuum, and that motion is impossible. Seneca even asserts that he carried his scepticism so far as to deny the existence of external objects. He is represented as a man of noble spirit, full of vigour and patriotism. Failing in his attempt to deliver Elea from the tyrant Nearchus, he calmly endured the torture, and at length bit off his own tongue, in order to prevent himself from betraying his companions. It is said that he was at last pounded in a mortar; and that, in the midst of his torments, he called Nearchus to him, as if he wished to reveal something of importance. The tyrant approached, and Zeno, pretending to whisper, caught his ear with his teeth and bit it off.

2. *Zeno*, the founder of the Stoic sect, was born at Cittium, a maritime town of Cyprus, about [illegible] B. C. His father was a merchant, who occasionally visited Athens, where he purchased many of the writings of the Socratic philosophers for his son, who early displayed a great propensity to learning. When he became a man, he went to Athens himself, where he became the disciple of the Cynic philosopher Crates; but, wishing to extend the sphere of his knowledge beyond the narrow limits of a sect which prided itself in a contempt for all science, he forsook Crates for Stilpo and various other masters, finishing his course of study in the school of Polemon, who detected his purpose of selecting materials for the formation of a sect of his own. The design he ultimately carried into execution, in a place called the *painted porch*, from its being adorned with the pictures of Polygnotus, and other eminent painters, and was generally the Stoa, or porch, whence all his followers acquired the name of *Stoics*. Zeno obtained great fame by the acuteness of his reasonings; and his private character being also highly respectable, he was much beloved and esteemed by his numerous disciples, and even by the great. The Ath

was placed so much confidence in his integrity, that they deposited the keys of their citadel in his hands, and decreed him a golden crown and a statue. He is said to have come rich into Greece, but he lived with great simplicity and abstemiousness; and the modesty of his disposition led him to shun crowds and personal distinction. He reached the advanced age of ninety-eight, when, hurting one of his fingers in a fall, he interpreted the accident into a warning to depart, and, repeating from the tragedy of Niobe, "Here I am; why do you call me?" went home and strangled himself, on the principle that a man was at liberty to part with life whenever he deemed it eligible to do so. The Athenians honoured him with a public funeral and a tomb, with an inscription recording his services to youth, by his rigid inculcation of virtuous principles and good conduct. His death is dated in the first year of the 129th Olympaid (B. C. 263). As the founder of a new school, he seems rather to have invented new terms than new doctrines, and agreed in many points with his masters of the Platonic sect. In morals, he followed the principles of the Cynics, freed of their practical indecencies, which induced Juvenal to observe that the two sects only differed in the tunic. For an account of his philosophy, see *Stoics*.

ZENO, Nicholas and Anthony; two celebrated Venetian navigators of the fourteenth century, to whom the discovery of America, prior to the voyage of Columbus, has been attributed. The story is as follows: Nicholas having set sail in a ship equipped at his own cost, on a voyage to Flanders and England (about 1388), was driven by a storm upon an island called by the inhabitants *Friseland*, which geographers suppose to have been one of the Faroe islands. Here he was kindly received by a prince of some neighbouring islands, called *Porland*, who was then meditating the conquest of Friseland. Having aided that prince in conquering this and other northern islands, Nicholas Zeno sent for his brother Anthony, who joined him there in 1391 or 1392. The former died about 1395; but the latter remained in the country till about 1405, when he returned to Venice. During their residence in Friseland, their attention was attracted by the report of a fisherman concerning some land about 1000 miles west of Friseland, inhabited by people living in cities, acquainted with the mechanical arts, and possessing some Latin books, which, however, they did not understand. While in that country, which he said was called Estotiland, the same person declared that he went, in a fleet fitted out by the prince of Estotiland, to a country to the south, called *Drogeo*, the inhabitants of which were naked and barbarous, though, far to the south-west, there was another civilized country, where the people had great abundance of [illegible] and silver, and in their temples sacrificed human [illegible]. This account determined the prince to [illegible] expedition thither under Anthony Zeno, [illegible], however, returned, after discovering the [illegible] of Icaria, and visiting Greenland, without [illegible]ishing the objects of the voyage. The [illegible] and letters of the brothers Zeno, and the map [illegible] country mentioned in them, remained in the [illegible] archives a century and a half, when they [illegible] published by Marcolini, under the title of the [illegible] of the Isles of Friseland, Esland, En-[illegible], Estotiland and Icaria (Venice, 1588). [illegible] is given in the second volume of Ramu-[illegible] collection, and in the third volume of Hakluyt, and has excited much discussion among geographical writers, such as Ortelius, Mercator, Forster, Malte-Brun, &c. The latter considers Estotiland to be Newfoundland, Drogeo, Nova Scotia or New England, and the civilized people to the south, the Mexicans, or some ancient nation of Florida or Louisiana. Washington Irving (*Life of Columbus*, appendix, No. xiii.) remarks that, although the brothers Zeno probably visited Greenland, the rest of the story resembles the fables circulated shortly after the discovery of Columbus, to arrogate to other nations and individuals the credit of the achievement.—See, further, Daru's *Histoire de Venise* (vol. i, b. 40).—At all events, it is evident that Columbus had no knowledge of these accounts, as he sailed under the expectation of finding land to the west, and not to the north.

ZENO, Apostolo, an eminent Italian man of letters, was born at Venice, in 1668. He was the son of a physician in that city, who was a descendant from a noble family long settled in the island of Candia. He was educated in a seminary of religion at Castelli, but principally cultivated polite literature, and the study of Italian history and antiquities. He first acquired celebrity by his melodramas—a species of poetry then much in vogue in Italy. In 1696, he instituted at Venice the academy Degli Animosi, and was the editor of the *Giornale de' Letterati d'Italia*, of which he published thirty-eight volumes between the years 1710 and 1719, and which still maintains its reputation. His first musical drama, *L'Inganni Felice*, was performed at Venice in 1695; and between that time and his quitting Vienna, to which he was invited by Charles VI., in 1718, who made him both his poet and historian, he produced forty-six operas and seventeen oratorios. He continued eleven years in the imperial service, at the expiration of which he obtained his dismission from the emperor, his personal friend, who allowed him to retain his salary on condition of furnishing annually a drama for music; which he continued to do until the appointment of Metastasio. On his return to Venice, he lived in literary leisure until his death, November 11, 1750, a few months before which he gave his valuable library and collection of coins to the Dominicans. Zeno was of much service to the musical poetry of the Italians, especially the opera, to which he gave a more regular form. (See *Opera*, and *Italian Poetry*.) But his labours as a biographer and historian are of more importance. These include his notes to Fontanini's *Biblioteca della Eloquenza Italiana*, his *Dissertazioni Vossiane*, his additions to Foresti's *Mappamondo Istorico*, and his biographies of Sabellico, Guarini, Davila, and the three Manutiuses. He also aided the labours of others, as Muratori. The dramatic works of Zeno were published at Venice in 1744 (10 vols., 8vo.). They rank not very high as poetical compositions; but he is the first Italian poet who gave his countrymen good rules for tragedy, and freed it from the intermixture of low buffoonery, with which the Italian serious drama was before infected. His letters, which were published in 1752 (3 vols., 8vo.), contain much sound criticism, and many notices of the literary history of his time.

ZENOBIA, Queen of Palmyra, claimed her descent from the Macedonian kings of Egypt. She was instructed in the sciences by the celebrated Longinus, and made such progress that, besides her native tongue, she spoke the Latin, Greek and Syrian languages. She also patronised learned men, and herself formed an epitome of Egyptian history. She was married to Odenatus, king of Palmyra, and accompanied him both in the war and the chase; and the success of his military expedition against the Persians is, in a great degree, attributed to her prudence and courage. Gallienus, in return for services which tended to preserve the East to the Romans after the capture of Valerian by Sapor, king of Persia, declared Odenatus emperor; on whose death, in 267, she assumed the sovereignty, under the title of queen of the East. She preserved the provinces which had been ruled by Odenatus, and was preparing to make other conquests, when the succession of Aurelian to the purple led to a remarkable change of fortune. That martial prince, disgusted at the usurpation of the richest provinces of the East by a female, determined to make war upon her: and, having gained two battles, besieged her in Palmyra, where she defended herself with great bravery. At length, finding that the city would be obliged to surrender, she quitted it privately; but the emperor, having notice of her escape, caused her to be pursued with such diligence that she was overtaken just as she got into a boat to cross the Euphrates. Aurelian spared her life, but made her serve to grace his triumph. The Roman soldiers demanded her life; and, according to Zosimus, she purchased her safety by sacrificing her ministers, among whom was the distinguished Longinus. She was allowed to pass the remainder of her life as a Roman matron; and her daughters were married, by Aurelian, into families of distinction. Her only surviving son retired into Armenia, where the emperor bestowed on him a small principality.

ZENTNER, George Frederic, baron von, Bavarian minister of justice, was born in 1752, in humble life, at Strassenheim, in the Palatinate, studied at Metz, Göttingen and Wetzlar, and was made professor of law in the university of Heidelberg, where he began to lecture, in 1779, with much success. At a later period, he was attached to the legation of the Bavarian Palatinate, at the congress of Rastadt, and, in 1799, was invited to Munich as privy counsellor. From him originated the two ordinances of 1799 and 1802, for the improvement of education in Bavaria, which have had such success that the Bavarian system makes an epoch in the history of education. In 1819, he was raised to the rank of nobility. In 1820, he was made minister, and, in 1823, minister of justice. The Bavarian constitution is almost entirely his work.

ZEOLITE (*mesotype, natrolite, skolezite*) occurs in delicate crystals, whose primary form is the right rhombic prism of 91° 20′; hardness about that of apatite; specific gravity 2·2; cleavage parallel to the lateral planes of the primary form; colour white, or grayish-white; crystals translucent or transparent. It is also found massive, in radiating masses. Before the blow-pipe, on charcoal, it becomes opaque, and then vitrifies without intumescence. It is composed, according to Vauquelin, of

Silex,	50·34
Alumine,	29·30
Lime,	9·46
Water,	10·00

Analysis by Geblen:—

Silex,	54·46
Alumine,	19·70
Lime,	1·61
Soda,	15·00
Water,	9·83

Zeolite is found in trap and lava. The finest specimens occur in Iceland, Tyrol, and the Faroe islands.

ZEPHYR; a soft, cool, agreeable wind; in Greece, the west, or rather west-south-west wind. The Greek name, according to the etymology, signifies *life-bringing*, because, at the time when this wind begins to blow, the plants are restored to life by the balmy spring air.

Zephyrus, according to the Grecian mythology, as well as that of the Romans, was one of the inferior deities—a son of Æolus, or of Astræus and of Aurora, a lover of Chloris or Flora. By the harpy Podarge, he was the sire of the swift horses of Achilles, Xanthos and Balios. His love being rejected by Hyacinthus, he was the cause of his death by blowing Apollo's quoit against his head. Some make him the husband of one of the Hours. Flowers and fruits are under his protection. He is represented as a gentle, beautiful youth, naked, with a wreath on his head, or flowers in the fold of his mantle.

ZERBST, or ANHALT-ZERBST, formerly a small German principality, which, in 1793, on the extinction of the branch of the house of Anhalt in possession of it, was divided between the three other branches of that house. (See *Anhalt*.) Zerbst, the capital, sixty-five miles south-west of Berlin, now belongs to the duchy of Anhalt-Dessau. It is situated on the small river Neithe, near the Elbe, and has a population of 8000 souls: the palace of the former princes is outside of the walls. Brewing forms a main branch of its industry, and the Zerbst beer is famous. Ornamental manufactures in gold, silver and jewellery are also carried on here.

ZERDUSHT. See *Zoroaster*.

ZETHES, ZETES, or ZETUS; a son of Boreas, king of Thrace, and Orithyia, who accompanied, with his brother Calais, the Argonauts to Colchis. In Bithynia, the two brothers, who are represented with wings, delivered Phineus from the continual persecution of the harpies, and drove these monsters as far as the island called Strophades, where, at last, they were stopped by Iris, who promised them that Phineus should no longer be tormented by them. They were both killed, as some say, by Hercules, during the Argonautic expedition, and were changed into those winds which generally blow before the dog-star appears, and are called Podromi by the Greeks. Their sister Cleopatra married Phineus, king of Bithynia.

ZETHUS. See *Amphion*.

ZETOUN, or ZEITOUN, Gulf of (anciently *Malaic gulf*), is a gulf or bay on the eastern coast of Greece, north-west of the island of Negropont, or Eubœa. By the protocol of February, 1830, the northern boundary of Greece, beginning at the mouth of the Aspropotamus, terminated at the gulf of Zetoun. But, on the 21st of July, 1832, the sultan signed a protocol, assenting to the extension of the frontier, as desired by the London conference, namely, from the gulf of Volo to the gulf of Arta.

ZEUS. See *Jupiter*.

ZEUXIS; a celebrated painter, who is said to have begun to practise his art in the fourth year of the ninety-fifth Olympiad (B. C. 397). He was a native of Heraclea, in Magna Græcia, and a pupil of Apollodorus. He is said, by Quintilian, to have been the first who understood the management of light and shade; but, at the same time, he was thought to have given too much of bulk and siveness in the human figure. He stood extremely high in his profession, excelled all his predecessors, and many stories are told of the fidelity with which he copied nature. One of his most famous pictures was a Helen, which he executed for the Crotonians (according to some, for Agrigentum), as an ornament for their temple of Juno. This figure was celebrated by the poets and amateurs of antiquity, as the finest specimen of art existing; and the artist himself, who was very vain and ostentatious, inscribed under it the lines of Homer, in which Priam speaks his admiration of the beauty of Helen. As models, he had selected five beautiful girls. He became very rich, and, at length, gave his pictures away, affecting to regard them as above all price. One of his finest performances, a Hercules strangling some Serpents in his Cradle, with Alcmena and Amphitryon looking on in terror, was presented to the Agrigentines. Of the circumstances of his private life, little is known; nor is it recorded how long he lived. Tradition, most likely erroneously, attributes his death to a very whimsical cause. It is said, that, having painted an old woman, on attentively surveying his work, he was seized with so violent a fit of laughter that he died on the spot. His contest with Parrhasius is well known. Zeuxis painted some grapes so naturally that birds flew to peck them. Parrhasius painted a curtain so naturally as to deceive Zeuxis himself, who asked to have it drawn aside, and, on learning the deception, acknowledged himself vanquished, as he had only deceived birds, while Parrhasius had deceived an artist. At another time, he painted a boy with grapes, at which the birds again flew. "If," said he, "the boy had been painted as well as the grapes, the birds would not have approached."

Lucian, has preserved a short notice of one of his pictures, which will serve to give some idea of the style and composition which this great master occasionally adopted.

"Among other strange subjects Zeuxis painted a female centaur suckling two young twin centaurs. There is now a copy of this picture at Athens, the exact counter-part of the original, which Sylla, the Roman general, is said to have sent with other pictures to Italy. The vessel in which they were embarked, sunk, I believe, about Cape Malea (St Angelo), when the picture and every thing else on board was lost. However, I saw the copy at Athens, and I will endeavour to describe it. Though I have no pretensions to any skill in judging of paintings, I have a complete recollection of this, as I saw it only a short time ago in the house of a painter at Athens; and perhaps the exceeding [illegible] which I then felt may help me in my description. The female centaur was represented reclining on some luxuriant grass, with the whole [illegible] part of the figure on the ground, and the hind [illegible] stretched out. The female or fore part was [illegible] raised, and rested on the bend of the elbow. The fore feet were not stretched out like the hind legs, which would have been inconsistent with the re[illegible] posture; but one fore leg had the knee bent and the hoof turned under, while the other, on the [illegible], was in an erect position, fixing itself [illegible] the ground, just as a horse does when he [illegible] to spring up. One of the young centaurs [illegible] held in her arms and suckled, as a fe[illegible]; the other was sucking like a colt. Above the group, on a kind of eminence, the old [illegible] father, is seen looking down and smiling. He is only about half visible; in his right hand he holds up a lion's cub which he raises above his head, pretending to frighten the young centaurs. What I most admired in this picture of Zeuxis is, the power which he has shown of giving variety to his subject. He has made the man altogether a formidable looking fellow, very wild, his hair tossed in confusion, and all over rough and shaggy: his shoulders are upraised, his look altogether savours of the wild beast, though he is smiling; he is like a tenant of the mountains, untamed. The female, on the contrary, is the model of a most beautiful Thessalian mare, unbroken and unused to the saddle: the upper part, the female, is exceedingly beautiful, except the ears, which are those of a satyr. The union of the two bodies is managed so dexterously that you hardly see where one animal begins to change into the other. One of the young ones seems savage even in its infant state; I was surprised at the look which both of them cast up towards the lion's cub, which they did as naturally as two children, all the time, however, keeping close to their mother's breast."

ZEYD. See *Seyd.*

ZEYST, OR ZEIST; a village of above 1200 inhabitants, with a fine castle, in the province of Utrecht, in the Netherlands, a league from the city of Utrecht, in an agreeable country containing many gardens and walks. It formerly belonged to the counts of Nassau, and was sold, in 1752, to a merchant in Amsterdam, who gave it to the Moravian Brethren for the establishment of a settlement, which at present consists of 300 members. They have built here brother and sister houses, and manufactories, where they make gloves, leather, ribands, gold and silver work, soap, candles, &c., of excellent quality. Not far from Zeyst there is a heath, where the French-Dutch army raised a pyramid of earth a hundred and forty-eight feet high, on the occasion of Napoleon's assuming the crown.

ZIA. See *Zea.*

ZIEGENBALG, BARTHOLOMEW, a celebrated Protestant missionary, was born at Pullnitz, in Upper Lusatia, June 14, 1683. Having gone through the usual course of school education at Gorlitz and Berlin, he removed, in 1703, to the university of Halle, where he applied himself closely to biblical literature. About this time, the king of Denmark being desirous of sending some qualified missionary to India, Ziegenbalg was particularly recommended to him; and, in 1705, he was ordained at Copenhagen for that purpose. He sailed to India the same year, and arrived at Tranquebar, in July, 1706, but met with great opposition on the part of the Danish authorities, who, for a short time, even confined him; nor was he allowed to proceed in a translation of the New Testament into the Malabar language, which he had commenced. Orders, however, arriving from Copenhagen for the Danish authorities to protect the missionaries, and also receiving great pecuniary assistance from England and Germany, he was enabled, in 1711, to make a voyage to Madras, and also to visit the territories of the Mogul. In October, 1714, he sailed for Europe, and reached Copenhagen in the following year. He was received with great respect, and, after completing a dictionary of the Malabar language, which was printed at Halle in 1716, quarto, he visited England, where he obtained an audience of George I., and the members of the royal family; and obtained a passage to India by the direct countenance of the East India company. He accordingly embarked at Deal, in March, 1716, and arrived at

Madras the following August, whence he proceeded to Tranquebar, and resumed his functions. Inspirited by the encouragement which he had met with in Europe, in 1718, he took an extensive journey by land, and was fulfilling the object of his mission with great zeal and success, when he was attacked by the cholera morbus, and died February 23, 1719, in the thirty-sixth year of his age. He was the author of some accounts in German of the particulars of his mission; of *Grammatica Damulica* (Halle, 1716, 4to.); *Brevis Delineatio Missionis Operis* (1717); *Explicatio Doctrinæ Christianæ Damulice* (1719, 8vo.); *Biblia Damulica* (1723). In some of these works he was assisted by his brother missionaries Grundler and Schultz.

ZIETEN. See *Ziethen.*

ZIETHEN, Hans Joachim von, Prussian general of cavalry, knight of the order of the black eagle, &c., one of the most distinguished generals of Frederic the Great in the seven years' war, was born in 1699, at Wustrau, a village in the county of Rappin, in Brandenburg, and began his military career when fourteen years old. After some time, he left the service, but returned to it in 1726, and was appointed lieutenant. A quarrel with his captain occasioned his imprisonment for a year. A duel in which he was engaged, soon after his release, caused his dismission from his corps. In 1730, however, he was again taken into the service. In 1731, he was made captain of cavalry, and, in 1735, made his first campaign against France. In 1736, he was made major, and, in the course of the first Silesian war, lieutenant-colonel. A few days after, he came near taking his former teacher, general Baronay, prisoner, upon which Frederic made him colonel, and gave him a regiment of hussars. In the campaign of 1742, he approached very near Vienna, with a corps of 15,000 men. When the second Silesian war broke out, in 1744, Ziethen was made major-general. He distinguished himself greatly in many engagements, and, on one occasion, marched through the Austrian army, having ordered his soldiers to turn their cloaks inside out, so that the white lining looked like the Austrian uniform. He was wounded, November 23, at Catholic Hennersdorf. His enemies succeeded in making Frederic ill disposed towards him; but he became reconciled to him shortly before the breaking out of the third Silesian war. The reconciliation took place in a manner which is creditable to Frederic. Ziethen was very active in the course of that war, and greatly distinguished himself. At Kollin he was wounded. At Leuthen he broke the path to victory. At Liegnitz he was made general of cavalry on the field of battle. The battle at Torgau was decided by him, though he received undeserved censure from Frederic. Soon after the peace of Hubertsburg, in 1763, he married a second time, when sixty-five years old; and the first son of this union was made a cornet in the cradle by Frederic. Frederic gave him many and repeated marks of his favour. Though seventy-nine years old, he wished to take part in the Bavarian war of succession; but Frederic declined his repeated offers. Ziethen was a man of a noble and frank spirit, and a favourite with the whole nation. He died in 1786, in Berlin. His life was written by L. J. Leopoldina von Blumenhagen (Berlin, 1800).

ZIGETH. See *Szigeth.*

ZIMARRA. See *Masks.*

ZIMMER, Patricius Benedict, a Catholic theologian, born at Abtsgemünd, on February 22, 1752, studied at Ellwangen and Dillingen, received orders in 1775, and was made, in 1783, professor of dogmatics in the university at Dillingen. In 1794, he was dismissed for reasons not assigned, and became pastor at Steinheim: in 1799 he was appointed professor of dogmatics at Ingolstadt, and, in 1800, was transferred to the university of Landshut; in 1806, was dismissed, probably for favouring the philosophy of identity, so called; but, after six months, was appointed professor of archæology and exegesis. In 1819 and 1820, while rector of the university, he was elected deputy of the second chamber of Bavaria, where he was chairman of the committee on the laws. He died in 1820. Among his theological writings are *Diss. de vera et completa Potestate ecclesiastica illiusque Subjecto* (Dillingen, 1784); *Theologiæ Christianæ theoreticæ Systema eo Nexu atque Ordine delineatum, quo omnium optime tradi explanarique posse videtur* (part i; ibid., 1787); *Veritas Christ. Relig., seu Theol. Christ. dogmaticæ* (parts i, and ii, Augsburg, 1789—1790); *Fides Existentis Dei, sive de Origine hujus Fidei, unde ea derivari possit et debeat criticum Examen*, &c. (1791). Among his philosophical works are Philosophical Doctrine of Religion (1 vol.); Doctrine of the Idea of the Absolute (1805); Philosophical Inquiries respecting the general Degeneracy of Mankind (3 vols., 1809). The three last are in German.

ZIMMERMANN, John George, chevalier von, an eminent physician and miscellaneous writer, was born in 1728, at Brug, in the canton of Bern, of which his father was a senator. After receiving a regular education, he made choice of the medical profession, and repaired to the university of Göttingen, where he studied under Haller, a relation of whom he subsequently married, and soon after was appointed public physician to his native town of Brug. In this retired situation, he employed his leisure in the publication of pieces both in prose and verse, and, among others, the first sketch of his popular work On Solitude. This was followed by his essay On National Pride, which passed through several editions, and was translated into various foreign languages. In 1763, he composed his work On the Experience of Medicine, which he followed up by several other professional treatises, in consequence of which he received an offer of the post of physician to the king of England for Hanover, which he accepted, and removed, in 1768, to that capital. His work On Solitude was published in four volumes, octavo. In 1786, he attended Frederic in his last illness, which afforded little room for medical skill, but enabled him to publish an account of his conversations with that celebrated sovereign; e. g. On Frederic the Great, and my Conversation with him shortly before his Death (Leipsic, 1788), and Fragments on Frederic the Great—works which did not increase his reputation. He also undertook a defence of that prince from the censures of Mirabeau, which writings exposed him to severe criticism. His mind was further disquieted by the part which he took in the controversies which arose out of the discussions that led to the French revolution. Attached by court habits and birth to the cause of royalty and aristocracy, he viewed with extreme jealousy every thing which exhibited the slightest tendency to affect them. He even proceeded so far as to address a memoir to the emperor Leopold, recommending the suppression of certain societies, of which he disapproved, by the hand of power, and mea himself in a prosecution for libel, for a charge which he brought against the baron de Knigge, for an unavowed publication. While his mind was in a state of agitation from these causes, the approach of the French towards Hanover, in 1794, almost subverted his reason. He could think of nothing but the pillage of his house and ruin of his fortune, and, under this morbid irritation, wasted to a skeleton, and died, absolutely worn out, in 1795, at the age of sixty. Most of his works have been translated into English; and his Solitude was, at one time, very popular. His writings towards the end of his life almost destroyed the reputation which he had earned at an earlier period.

ZIMMERMANN, EBERHARD AUGUSTUS WILLIAM VON, a German writer of note in the departments of geography, ethnography, anthropology and zoology, was born, in 1743, at Uelzen, near Celle, in Hanover. He studied at Göttingen, where he wrote on the analysis of curves, and at Leyden, where he conceived the idea of dividing the animal kingdom with reference to climates, and of directing his attention to the migrations and the ramifications of the races, beginning with man himself—an idea which he kept in view in all his travels and in his writings. He visited England, Italy, France, also Russia and Sweden. To England he went three times, and published in London, in 1788, a Political Survey of the present State of Europe, with sixteen statistical tables. In 1797, he published General Observations on Italy, also a treatise on the Molfetta in Apulia. His Geographical Annals were continued for three years. In 1795 appeared his France and the Free States of North America, and, at a later period, his General View of France, from Francis I. to Louis XVI., and of the Free States of North America (1800, 2 vols.). In 1766, he had been appointed professor of natural philosophy in the Caroline college at Brunswick. The emperor Leopold raised him to the rank of nobility for his writings against the spirit of the revolution. His most important work is his Geographical Pocket-book, which appeared in twelve annual numbers, from 1802 to 1813, and describes, in an agreeable manner, a great part of the earth. A sort of abridgment appeared under the title the Earth and its Inhabitants, according to the latest Discoveries, in five volumes. In 1779, he wrote on the compressibility and elasticity of water. He died in 1815.

ZINC, is a metal of a bluish-white colour, somewhat brighter than lead, of considerable hardness, and so malleable as not to be broken with the hammer, though incapable of much extension in this way. At a temperature between 212° and 300° Fahr., it is both malleable and ductile. Its specific gravity is from 6·9 to 7·2. When broken by bending, its texture is seen to be coarsely granular. On account of its imperfect malleability, it is difficult to reduce it into small parts by filing or hammering; but it may be granulated, like the malleable metals, by pouring it, when fused, into cold water; or, if it be heated nearly to melting, it is then sufficiently brittle to be pulverized. It melts at about 700° Fahrenheit, and soon afterwards becomes red hot, burning with a dazzling white flame of a bluish or yellowish tinge, and is oxidized with such rapidity that it flies up in the form of white flowers, which are called *flowers of zinc*, or *philosophical wool.* These are generated with such rapidity that the access of air is soon intercepted, and the combustion ceases unless the metal be stirred, and a considerable heat kept up. If the metal be heated in close vessels, it rises without being converted into oxide. Chemists are not agreed as to the number of oxides of zinc: but the one above mentioned is the only one of importance. At common temperatures, it is white; but when heated to low redness, it assumes a yellow colour, which gradually disappears on cooling. It is quite fixed in the fire, and insoluble in water. It is a strong salifiable base, forming regular salts with acids, most of which are colourless. It combines also with some of the alkalies. It consists of thirty-four parts zinc and eight parts oxygen. When metallic zinc is exposed for some time to air and water, or is kept under water, it acquires a superficial coating of a gray matter, which is called a *sub-oxide of zinc.* When zinc is burned in chlorine, a solid substance is formed, of a grayish-white colour, semi-transparent. This is the *chloride of zinc.* It may likewise be made by heating together zinc filings and corrosive sublimate. It is soft as wax, fuses at a temperature a little above 212° Fahr., and rises in the gaseous form at a heat much below ignition. Its taste is intensely acrid, and it corrodes the skin. It acts upon water, and dissolves in it, producing much heat. Its solution, decomposed by an alkali, affords the white hydrated oxide of zinc. This chloride has been called the *butter of zinc* and *muriate of zinc.* It consists of nearly equal weights of zinc and chlorine. Bromide and iodide of zinc may be formed by processes similar to those for preparing the analogous compounds of other metals. Sulphuret of zinc may be formed by heating to redness a mixture of oxide of zinc and sulphur. This substance, as found in nature, will be described in the sequel, under the head of the *ores of zinc.* The salts of zinc possess the following general properties: They generally yield colourless solutions with water; ferroprussiate of potash, sulphureted hydrogen and alkalies, occasion white precipitates; infusion of galls produces no precipitate.

Sulphate of zinc. Dilute sulphuric acid dissolves zinc, and the salt may be obtained in fine prismatic four-sided crystals. It is commonly called *white vitriol.* It may be formed also by dissolving the white oxide of zinc in sulphuric acid. But it is more extensively manufactured from the native sulphuret in the following manner: The ore is roasted, wetted with water, and exposed to the air. The sulphur attracts oxygen, and is converted into sulphuric acid; and the metal, at the same time being oxidated, combines with the acid. After some time, the sulphate is extracted by solution in water; and by evaporating the solution to dryness, the mass is run into moulds. The taste of this salt is extremely styptic. It reddens vegetable blues, though in composition it is strictly a neutral salt. Dilute nitric acid combines rapidly with zinc, and produces much heat, at the same time that a large quantity of nitrous acid gas is evolved. The solution is very caustic, and affords crystals by evaporation of nitrate of zinc. Muriatic acid acts very strongly upon zinc, and disengages much hydrogen. Phosphoric acid also dissolves this metal. The phosphate does not crystallize, but becomes gelatinous, and may be fused by a strong heat. Fluoric, boracic, carbonic, acetic and oxalic acids, each form compounds with the oxide of zinc. Zinc may be combined with phosphorus by projecting small pieces of phosphorus on melted zinc. The compound is white, with a shade of bluish-gray. Zinc forms a brittle alloy with antimony.

An alloy of zinc and iron has been observed in a zinc manufactory at Bristol. It lined the tube leading from the retort. It was hard and brittle; the fracture showing the broad facets like zinc, but of a duller gray colour, with surfaces more rough and granular. Its specific gravity was 7·172. It consisted of 92·6 zinc and 7·4 iron.

The *ores of zinc* are five in number; viz. *blende*, *red oxide of zinc*, *electric calamine*, *calamine*, and *white vitriol*.

1. Blende occurs crystallized in rhombic dodecahedrons, octahedrons, and in numerous intermediate forms. It cleaves with facility parallel to the faces of the rhombic dodecahedron, which is the primary form of its crystals; lustre adamantine; colour reddish-brown, black, yellow and green; streak white to reddish-brown; hardness equal to that of apatite; specific gravity 4·5 to 4·8. It occurs massive also, as well as in crystals; structure curved, lamellar, columnar, granular and impalpable. Composition, according to the analysis of doctor Thomson:—

Zinc,	68·48
Sulphur,	23·16
Iron,	8·08

Blende occurs in primitive and secondary rocks, and is found associated with galena and copper pyrites. It abounds in England, Scotland, Saxony, Carinthia, and other European countries. It is the ore which affords the zinc of commerce. Specimens from some localities are phosphorescent, with a yellow light simply on friction. This is the case at Schlackenwald, Bohemia, in the Hartz, and in Perthshire. The splendent fibrous variety from Przibram contains a small proportion of the rare metal cadmium. This metal has likewise been detected in the radiated blende of Freyberg and Derbyshire.

2. *Red oxide of zinc.* This interesting ore possesses only a lamellar structure, never having been met with in perfect crystals. It yields to cleavage parallel to all the faces of a regular six-sided prism. Its colour is ruby or blood-red. It is translucent, with a shining lustre. By long exposure to the weather, it suffers decomposition at the surface. It is easily scratched by the knife; specific gravity 6·2. It consists of oxide of zinc 88 and red oxide of manganese 12. It is infusible before the blowpipe, excepting when mixed with sub-carbonate of soda, in which case, it melts into a transparent yellow bead. Its only localities are Franklin and Stirling, New Jersey, where it occurs along with ores of iron and manganese.

3. *Electric calamine.* This ore occurs crystallized, stalactitic, mamillary, and compact. The crystalline forms are numerous; the primary form is that of a right rhombic prism of 102° 30′ and 77° 30′. The crystals are not often solitary, but mostly disposed in radiating groups. It varies from transparent to translucent or opaque. Its hardness is above that of apatite; specific gravity 3·4. Its colours are grayish, bluish and yellowish-white, or possessed of some tinge of green; and occasionally it presents a brownish or blackish colour. It consists of

Oxide of zinc,	68·3
Silex,	25
Water,	4·4

When gently heated, it is strongly electric; some varieties become so by friction. Before the blowpipe, it is infusible, but loses twelve per cent. by ignition. Its native localities are in primitive and secondary rocks. It is found at Retzbania in Hungary, at Bleiberg in Carinthia, and at Freyberg in the Brisgau. In Scotland, it is found in the lead mines of Wantockhead. It also occurs in Wales and England.

4. *Calamine.* This valuable ore is found crystallized, pseudimorphous and massive. The crystals are obtuse or acute rhomboids, or long quadrilateral tables: cleavage is parallel to all the planes of an obtuse rhomboid of 106° 30′; lustre between vitreous and resinous. It is more or less transparent, commonly of a grayish or yellowish-white colour, with some shade of green or brown; hardness equal to apatite; specific gravity 4·1 to 4·4. It is composed of oxide of zinc 65·2 and carbonic acid 34·8. Before the blow-pipe, it is infusible, but loses about thirty-four per cent. by ignition. It dissolves with effervescence in muriatic acid. It is very abundant in England, in Siberia, and in several countries of Europe. It is an ore which is highly prized, on account of the facility with which brass may be manufactured from it.

5. *White vitriol* occurs massive, stalactitic, botryoidal, reniform, and investing. The structure of the massive is fibrous and radiated. It is shining, soft, brittle and translucent; specific gravity 2. It has a nauseous and metallic taste. It consists of

Oxide of zinc,	[illegible]
Sulphuric acid,	[illegible]
Oxide of manganese,	[illegible]
Water,	[illegible]

Before the blow-pipe, it is fusible with ebullition, giving off large quantities of sulphureous acid, and leaving a gray scoria. It dissolves in boiling water. It occurs principally with blende, from whose decomposition it is supposed to arise. Its localities are England, the Hartz, Austria, and Sweden.

The ores of zinc are met with in Germany, Belgium, France, and Sweden; and in Great Britain in Cornwall, especially in Huel Hope mine, in the parish of Gwennap; in a conglomerate or pudding stone-rock of the Mendip Hills in Somersetshire; abundantly in the limestone of Derbyshire, where the lead-mines are situated; and associated with the lead-ore at Holywell in Flintshire; at Alston Moor in Cumberland; and at Wanlock Head and Lead-Hills on the borders of the counties of Dumfries and Lanark. But all the zinc that is at present produced in the United Kingdom is trifling in quantity, and quite insufficient for the demand, so that a large amount is imported annually, chiefly from Germany and Belgium. In the year 1833 the importation was 65,115 cwts., of which rather more than a half was retained for home consumption, the chief export being to the East Indies.

To obtain the metal, the ore, whether it be calamine or blende, after being raised from the mine, is carefully picked, to separate any impurities, and roasted in a furnace in a moderately red heat, by which the carbonic acid is driven off from the calamine and the sulphur from the blende. An oxide of zinc remains, and this is intimately mixed with powdered coal by their being ground together in a mill. The mixture is now put into large earthen crucibles, about four feet high, having an iron tube in the interior, one end of which rises near to the top, the other passing through the bottom of the pot and the floor of the furnace into a cistern of water underneath. Covers are firmly luted to the crucibles; they are surrounded with fuel in the furnace, and an intense heat is kept up for several hours. The carbon of the coal combines with the oxygen of ore; and the metallic zinc, thus set free, rises in a melted state to the top of the crucible, descends through the iron tube, and is condensed in the water in the form of drops. These drops, being collected, are again melted, and poured into moulds to form the bars or ingots in which the metal is brought to market. Eight tons of calamine and twenty-two tons of coal yield about two tons of zinc.

Uses of Zinc.—The chief consumption of this metal is in making brass, which is a compound of copper and zinc. The ores, after undergoing the process of roasting near the mines in England, are chiefly smelted in the neighbourhood of Birmingham, Sheffield, and Bristol, where there are large manufactories of brass. The proportions of the two metals are very different in the brass made in different places. The common brass of Paris contains about 13 per cent. of zinc, that of England rather more; and a remarkably fine brass made at Geneva for the nicer parts of watchmaking, contains as much as 25 per cent. The brass of England is far inferior to that made in many parts of the continent, and that used for philosophical instruments is chiefly obtained from Holland. Zinc, rolled out into sheets, has been used for covering houses instead of lead, and it has of late been manufactured into vessels for culinary and other domestic purposes. It is very unsuitable, however, for kitchen-utensils, because it combines very readily with acids, and such combinations act as violent emetics. Zinc is used in China for coins. United with oxygen it forms a white powder, which is used in oil-painting.

ZINGARELLI, Nicolo, a celebrated composer, the last scion of the genuine Neapolitan school, chapel-master at St Peter's in Rome, was born at Naples, in 1752. In the seventh year of his age, he lost his father, and was placed at the conservatory in Loretto, for the purpose of studying music under Fenaroli. Cimarosa and Giordanello were his school-fellows here. To obtain a more complete knowledge of the theory of the art, he also studied under the abbate Speranza, and, on leaving the conservatory, received the place of master of the chapel at Torre dell' Annunziata. In 1781, he composed for the theatre San Carlos, in Naples, his opera *Montezuma*, and, in 1785, brought forward the *Alzinda*, in the theatre Della Scala in Milan, with great success. In this work, he adopted a more simple and easy style. His best operas are Pirro; *Artaserse; Romeo e Giulietta*. In 1789, he brought out his *Antigone*, from Marmontel, in Paris; but the public events, then occurring, absorbed the attention of the public, and he soon returned to Italy, where, in 1806, he became director of the Loretto chapel. In 1812, he was appointed chapel-master in St Peter's, and soon after, director of the new conservatory in Naples. Zingarelli composed much church music; and his works are highly esteemed for their expression.

ZINGIS, GENGIS, or JENGHIS KHAN. See *Genghis Khan*.

ZINZENDORF, Nicholas Louis, count von, the restorer of the Moravians, or founder of the society of United Brethren (see *Bohemian Brethren*, and *United Brethren*), was born May 26, 1700, at Dresden, in Saxony, where his father was one of the elector's ministers of state, and much esteemed. He died early, and the son was educated by his grandmother, Mad. von Gersdorf, a pious and learned lady, who published a collection of hymns and poetical contemplations, and corresponded in Latin with the learned Schurtzfleisch. At that time, the opinions of the Pietists, in Germany, attracted much attention. The pious Spener often visited Mad. von Gersdorf. His visits, and the pious meetings, held daily in the house, contributed to awaken early religious feelings in young Zinzendorf, which soon ran into extravagance. While a child, he used to write little letters to the Saviour, and throw them out of the window, hoping that the Lord might find them. When ten years old, he was sent to the academy of Halle, then under the direction of its founder, the devout Franke. Here he established pious meetings, and founded a mystic order of the mustard-seed. His uncle and guardian did not view his turn of mind favourably, as he wished to prepare him for practical life, and sent him, in 1716, to the university of Wittenberg, the theological teachers of which were known under the name of the *Orthodox*, and were the most violent opponents of the Pietists of Halle. The feelings of Zinzendorf, however, remained unchanged, and, in 1717, when the centennial celebration of the reformation took place at Wittenberg, he shut himself up in his chamber, and mourned over the degeneracy of the church, with fasting and weeping. Besides his other studies, he applied himself, without assistance or guidance, to theology, and, at this early period, resolved to devote himself to the ecclesiastical profession. He left Wittenberg in 1719, and travelled through Holland and France. These travels he described in a work bearing the title Pilgrimage of Atticus through the World. During this period, he spent his time chiefly in conversing with distinguished clergymen on religious subjects. In 1721, he received an appointment in the government at Dresden, but, in 1727, resigned it, having, during his term of office, taken little share in business, and chiefly occupied himself with the study of theology and pious exercises. In 1722, he married a countess of Reuss von Ebersdorf, and gave some emigrant Moravian Brethren permission to settle on his estate of Berthelsdorf, Upper Lusatia. This settlement received, in 1724, the name of *Herrnhut*, which signifies "protection of the Lord." The settlers were at first few, but soon increased in number; and the count, in conjunction with a Lutheran minister, named Rothe, the clergyman of Berthelsdorf, and some others, laboured to instruct them, and to educate their children. At length, he conceived the idea of founding a religious community,—not a sect, as the United Brethren do not consider themselves a sect,—and, for this purpose, made known his opinions in various writings, sometimes contradictory to each other, which excited much opposition. But the obstacles in the way of his plan could not induce him to give it up. In 1734, he went, under an assumed name, to Stralsund, passed an examination as a theological candidate, and preached for the first time in the city church. He now travelled into different countries, in order to extend his society, from which already missionaries proceeded; but, as may be imagined, he did not every where meet with a favourable reception. In 1736, he was banished from his country. The causes assigned were the innovations, conventicles and dangerous principles that he had introduced, by which the authority of the government, and the established forms of religious worship, were brought into disrepute. But, in 1747, this order was repealed. Zinzendorf, in the mean time, had been consecrated bishop of the Moravian church in Berlin. As he could not preach publicly in that city, he held for a time private meetings in his house, which were very much frequented. In 1739, he wrote a kind of catechism,—the Good Word of the Lord,—and made a voyage to St Thomas and St Croix, in the West Indies, where the Brethren had already established missions. (q. v.) His object was to put these on a firmer footing. With the same view, he went, in 1741, to North America, whither a daughter, sixteen years old, accompanied him. He assisted here in establishing missions among some of the Indian tribes. On all these expeditions, he was incessantly occupied, not only with preaching, corresponding, and attending to the general concerns of the society, but in writing books. He wrote, during this time, more than a hundred books, some for the edification and instruction of his society, others in answer to attacks on himself and his followers, and others giving accounts of the origin and organization of the society, and of his own labours. Many excellent and elevated passages are to be found in them, which J. G. Müller, in his sketch of Zinzendorf (in the Confessions of Remarkable Men, 3d vol., p. 166 et seq., 222 et seq.), has collected; but many parts of them are such as most readers would consider extravagant, and many expressions appear indecorous and objectionable. These are to be attributed to the warmth of his imagination, and his habits of rapid composition, connected, perhaps, with a desire of appearing original, and a want of taste. His hymns, in particular, which stand unaltered in the old hymnbook of the Herrnhuters, are full of quaint, ambiguous and indecent expressions and images, and are often far from bearing the stamp of poetic inspiration, especially those hymns in which he represents the mysterious union of Jesus, the Bridegroom, with his bride, the church; and not less objectionable was his doctrine of the office of mother (*Mutteramte*), which he ascribed to the Holy Ghost. Sometimes a whole hymn consists of but one image variously presented. These absurdities had even extended to the religious service. Zinzendorf himself, in the latter part of his life, would gladly have blotted out many of these passages from his writings, and strove to give a better direction to his community, in which he was not without success. Certainly part of the praise which must be given to the Moravians for their activity, their industry, their peaceable manners,* and good behaviour, wherever they have settled, is due to their founder. When he returned, in 1743, to Europe, he made a journey to Livonia, where he had adherents; but the Russian government prohibited him from proceeding farther; and he was sent back to the frontier under a military escort. He then made several visits to Holland and England, where he spent above four years, and, countenanced by archbishop Porter, general Oglethorp, and others, obtained an act of parliament for the protection of his followers throughout the British dominions. Though the number of his opponents constantly increased, he had the satisfaction of seeing new societies of his followers arising, which sent missions to other parts of the world; e. g. the East Indies, Tranquebar, &c. He also succeeded in establishing a Moravian academy, and in obtaining a commission of investigation into their principles, which commission declared the Moravian community true adherents of the Confession of Augsburg. (See the article *United Brethren.*) His second wife was Anna Nitschmann, who, in 1725, had come with her parents from Moravia, and had been, for many years, superintendent of the "single sisters" at Herrnhut. Zinzendorf died May 9, 1760, at Herrnhut. See David Cranz's *Alte und neue Brüderhistorie*, and Spangenberg's *Leben des Grafen N. L. von Zinzendorf* (Barby, 1772—1775, 8 vols.), of which Reichel and Duvernois have published abridgements. Herder, in his *Adrastea* (4th vol., number i.), has made some excellent observations on Zinzendorf and his works.

ZION. See *Sion.*

ZIRCON. This rare mineral, which is sometimes a gem, occurs in crystals, whose forms are octahedrons and right square prisms surmounted by four-sided pyramids. The primary form is an obtuse octahedron, whose planes over the summit incline under the angle of 84° 20′. Cleavage takes place parallel to the faces of the primary figure, but with great difficulty; lustre adamantine; colour red, brown, yellow, gray, and white: streak white; specific gravity 4·5 to 4·7; hardness rather superior to quartz. It varies from transparent to opaque. Before the blow-pipe, alone, it is infusible, but with borax, melts into a transparent glass. It consists of

Zirconia, ...	[illegible]
Silex, ...	[illegible]
Oxide of iron, ...	[illegible]
Oxide of titanium, . . .	1 [illegible]

Zircon occurs imbedded in sienite and granite. It is also found imbedded in several simple minerals, and occurs in the sands of rivers. Its localities are Frederic-Schwerin in Norway, Kitiksal in Greenland, at which places it is found in sienite. It occurs at several places in the mountains of gneiss, in New York and New Jersey; also in magnetic iron ore, at Monroe in New York. Very distinct detached crystals are brought from Buncombe county, in North Carolina. Loose crystals of fine colours are found in the sands of rivers in Ceylon, with spinelle ruby, sapphire, and iron sand; likewise in the district of Ellore, in India, and in the brook Expailly, in France. All the varieties of zircon which possess transparency, are cut and polished by the lapidary, but, in general, are not greatly esteemed. The exposure of some colours to heat deprives them of their hues, in which condition they are said to have been sold for diamonds.

ZIRCONIA. This earth was discovered by Klaproth, in 1789, in the zircon. To obtain it, powder the zircon very fine, mix it with two parts of pure potash, and heat them red hot in a silver crucible for one hour. Treat the substance obtained with distilled water, pour it on a filter, and wash the insoluble part well. It will be a compound of zirconia, silex, potash, and oxide of iron. Dissolve it in muriatic acid, and evaporate to dryness, to separate the silex. Redissolve the muriates of zirconia and iron in water; and, to separate the zirconia which adheres to the silex, wash it with weak muriatic acid, and add this to the solution. Filter the fluid, and precipitate the zirconia and iron by pure ammonia; wash the precipitate well, and then treat the hydrates with oxalic acid, boiling them well together, that the acid may act on the iron, retaining it in solution, whilst an soluble oxalate of ammonia is formed. It is then to be filtered, and the oxalate washed, until no iron can be detected in the water that passes. The earthy oxalate is, when dry, of an opaline colour. After being well washed, it is to be decomposed by heat in a platina crucible. Thus obtained, the zirconia is perfectly pure, but is not affected by acids. It must be reacted on by potash as before, and then washed until the alkali is removed. Afterwards dissolve it in muriatic acid, and precipitate by ammonia. The hydrate thrown down, when well washed, is easily soluble in acids. It is insoluble in water and the pure alkalies, but the alkaline carbonates dissolve it. Heated with the blowpipe, it does not melt, but emits a yellowish phosphoric light. Heated in a crucible of charcoal, bedded in charcoal powder, placed in a stone crucible, and exposed to a good forge for some hours, it undergoes a hasty fusion, which unites its particles into a gray opaque mass, resembling porcelain. In this state, it is sufficiently hard to strike fire with steel, and scratch glass. Specific gravity 4·3. Potassium, when brought into contact with zirconia ignited to whiteness, is converted into potash, and dark particles of zirconium, the metallic base of the earth, make their appearance. They are as black as charcoal, and, at a temperature slightly elevated, burn with great intensity. It combines with sulphur, and forms a sulphuret of zirconium.

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* A remarkable proof of the peaceable and sober character of the Moravians, is to be found in the fact that, during a revolt, some years ago, of the slaves in the island of Jamaica, in which the feelings of the whites were excited to the highest degree against the missionaries, so that they were in general ordered to leave the island, and a few were executed, the Moravians alone were allowed to remain undisturbed.

ZIRKNITZ, OR CZIRKNITZ; a remarkable lake of the Austrian states, in Carniola, twenty-three miles south-west of Laybach. It is situated amidst lofty mountains and frightful precipices, containing vast subterranean caverns, which communicate with each other by openings, in general small. The lake is six miles in length, and three in breadth, and presents a curious phenomenon. The bottom remains dry for about four months, is cultivated, and made to produce a crop of millet and hay. At the end of that time, the water rises with great impetuosity, and fills the lake in the short space of twenty-four hours. This singular phenomenon is owing to its having two subterranean outlets, by which the water is discharged, and through which it again rises.

ZISCA, OR ZIZKA (pronounced *Shishka*). John Ziska, of Trocnow, the formidable general of the Hussites, was descended from a noble Bohemian family, and was born about 1360, on a farm belonging to his parents, at Trocnow, in the present circle of Budweis, in the open air, under an oak. He lost his right eye in his boyhood, but did not, as some have supposed, derive the name of Zisca from that circumstance. This was the name of his family, and does not signify *one-eyed*. He went as a page to the court of Wenceslaus VI., king of Bohemia, where he subsequently became a chamberlain. He displayed great talents from early youth, but, at the same time, a gloomy and solitary disposition. His first military service was in the band of volunteers who went from Bohemia and Hungary to assist the Teutonic knights against the Poles. He took part in the battle of Tanneburg, on July 15, 1410, in which the knights suffered a great defeat. He then fought in the Hungarian service against the Turks, and afterwards with the English against the French, at the battle of Agincourt (1415). After his return, he remained at the court of king Wenceslaus, and shared in the indignation of a great part of the Bohemian nation, at the fate of the two reformers, Huss (q. v.), and Jerome of Prague. A monk having dishonoured his sister, who was a nun, and abandoned her, Zisca became bent on vengeance. Wenceslaus himself one day told him, that, if he knew any means of taking revenge for the disgrace inflicted on the Bohemians at Constance, he had his consent to use them. Zisca now left the court, tried the disposition of the people, and soon returned to Prague. Nicholas of Hussynecz had already placed himself at the head of the insurgents, and Wenceslaus called on the citizens of Prague to give up their arms: but Zisca led them armed into the castle (April 15, 1418), and he said to the king, "With these weapons will we fight for thee;" and the citizens retained their arms. Zisca was considered, from this time, the head of the Hussites. On the occasion of a procession (July 30, 1419), the priest of the Hussites was hit by a stone. They immediately stormed the town-house, at the instigation of Zisca, and threw thirteen of the city council out of the window on the pikes of the people. King Wenceslaus died of fear in consequence of this affair. His brother and successor, the emperor Sigismond, delayed undertaking the government of Bohemia, and Zisca gained time to make his preparations: yet he was at first obliged to retreat from Prague to Pilsen. Sigismond now began to execute the adherents of the new doctrine, and the Hussites, under Zisca, swore never to acknowledge him as king of Bohemia. They erected fortresses, and Zisca caused a town to be built on mount Tabor, from which the Hussites are sometimes called *Taborites*. He fortified the new city in a way which reflected honour on his skill. He is also said to have invented the bulwark of wagons, by which he protected his infantry against the enemy, as he was destitute of cavalry. In a short time, he disciplined his ill-armed and licentious horde. A few successful engagements procured him better arms, and horses for mounting a part of his men. His enterprises were undertaken from vengeance, religious hatred, and love of plunder. He committed many cruelties, partly in order to make himself feared, partly because he was obliged to yield to the wild passions of his fanatical followers. In order to defend Prague against Sigismond, who was approaching with a large army, he repaired thither, and intrenched himself on the hill of Wittkow. Here, July 14, 1420, he repelled repeatedly the assaults of 30,000 men with 4000; and the place is still called *Zisca's hill*. From want of money, the emperor effected little during this campaign. In 1421, Zisca took the castle of Prague, and there got possession of the first four cannons, which, since the invention of gunpowder, had found their way to Bohemia. From this time, cannons and guns (though the latter could be procured at first only by noblemen) became common among the Hussites and their enemies. Zisca continued his system of plundering in Bohemia, took several fortresses, generally by assault, and treated the conquered cruelly. After the death of Nicholas of Hussynectz, in 1421, all the Hussites acknowledged him as their leader and chief; but he caused the crown of Bohemia to be offered to the king of Poland. By incredibly quick marches he everywhere anticipated the enemy. During the siege of the castle of Raby, an arrow deprived him of his only remaining eye. He now had himself carried about with his army on a car, so that he could be seen by his men, whom he arranged for battle by means of the descriptions which were given to him of the country. He had a legion called the ***invincible brethren***, with which he generally decided the fate of actions. He defeated a considerable army which the emperor Sigismond sent against him, at Deutschbrod (Jan. 18, 1422), and even penetrated, in 1422, into Moravia and Austria. The citizens of Prague refusing to obey his orders, he humbled them by several defeats. Only once, at Kremsir, in Moravia, he was obliged to retreat. This was the only time that he was ever beaten in the open field. Sigismond offered him, at last, the government of Bohemia, with great privileges, if he would declare for him. But during the negociations, while he was occupied with the siege of Przibislaw, in the circle of Czaslau, a pestilential disorder carried him off (Oct. 12, 1424). The Taborites, infuriated at his death, stormed the town, and killed every living being, and burnt every dwelling. Zisca had won thirteen pitched battles, and been victorious in more than a hundred fights, notwithstanding his blindness and age. He considered himself an instrument of God's wrath, and called the cries of the monks and priests whom he sent to the stake, his sister's bridal song. He was buried in the church of Czaslau; and his favourite weapon (an iron battle-axe) was hung up over his tomb. It is related that the emperor Ferdinand I., more than a hundred and thirty years after, when on a journey to Prague, happening to visit the church of Czaslau, and being told that Zisca was buried there, immediately left the church, and even the town. The tomb was overturned in 1627, by order of the emperor, and Zisca's bones removed. The story of his having ordered his skin to be used as a drum, is a fable. See Max. Millauer's *Diplomatic Historical Essay on John Zisca of Trocnow* (Prague, 1824, in German); see also the article *Huss and Hussites*.

ZITTAU; a town eighteen leagues from Dresden, in the Saxon province of Upper Lusatia, on the river Mandau, which empties into the Neisse, in the vicinity; population, 8100; lat. 50° 49′ north. Zittau is the centre of an active transit trade, owing to its situation near the Bohemian frontier, and in the midst of some industrious manufacturing villages. Here are a gymnasium, five churches, a theatre, &c.

ZISANIA. See *Wild Rice*.

ZNAYM; a town in Moravia, capital of a circle of the same name, near the river Teya, thirty-eight miles north-west of Vienna, and sixty-eight south-west of Olmütz; lon. 16° 2′ east; lat. 48° 31′ north; population, 6000. It contains a citadel, a Catholic gymnasium, a Carthusian monastery, and some good houses, but is generally ill-built. Population of the circle, 135,567; houses, 24,298; families, 33,578; square miles, 1260. It is generally hilly, but tolerably fertile. In the neighbourhood of this town, the armistice between the French and Austrians was concluded, July 12, 1809, which was followed by the peace of Vienna.

ZOBEIDE, OR ZEBD-EL-KHEWATIN (the *flower of women*), was the cousin and wife of the celebrated caliph Haroun al Rashid. History records her piety and generosity, and the Persian writers speak of her as the founder of Tauris, one of the chief cities of Persia; but she performs a more important part in the Arabian Nights, in which she is a more conspicuous character than in history. She died in 831, after having survived her illustrious husband twenty years.

ZOBTENBERG; a mountain in Silesia, about eighteen miles from Breslau, near the small town of Zobten, 2318 feet above the level of the sea, with a fine extensive view from the top. According to Büsching, the ancient Asciburg, or As-castle (Asgard), stood here, corresponding to the *mons Asciburgius* of Ptolemy. The mountain is of a primary character. A block of from 7000 to 8000 cwt. was taken from this mountain, which, according to the wish of marshal Blücher, is to cover his tomb in the shape of a cube.

ZODIAC (from the Greek ζῶα, animals, because the constellations composing it are represented under the figures of animals), in astronomy; an imaginary ring or broad circle in the heavens, in the form of a belt or girdle, within which the planets all make their revolutions. In the middle of it runs the ecliptic, or path of the sun in his annual course; and its breadth, comprehending the deviations or latitudes of the earlier known planets, is, by some authors, accounted sixteen, some eighteen, and others twenty degrees. The zodiac, cutting the equator obliquely, makes with it the same angle as the ecliptic, which is its middle line; which angle, continually varying, is now nearly equal to 23° 28′, which is called the obliquity of the ecliptic, and constantly varies between certain limits which it can never exceed. (See *Ecliptic*.) The zodiac is divided into twelve equal parts, of thirty degrees each, called the *signs of the zodiac*, being so named from the constellations which anciently occupied them. But the stars having a motion from west to east, those constellations do not now correspond to their proper signs; from whence arises what is called the *precession of the equinoxes*. And, therefore, when a star is said to be in such a sign of the zodiac, it is not to be understood of that constellation, but only of that dodecatemory, or twelfth part of it. See *Constellations*, *Precession of the Equinoxes*, and *Denderah*.

ZODIACAL LIGHT; a triangular beam of light, rounded a little at the vertex, which is seen at certain seasons of the year, before the rising and after the setting of the sun. It resembles the faint light of the Milky Way, and has its base always turned towards the sun, and its axis inclined to the horizon. The length of this pyramidal light, reckoning from the sun as its base, is sometimes 45°, and at others, 150°; and the vertical angle sometimes 26°, and sometimes 10°. It is generally supposed to arise from an atmosphere surrounding the sun, and appears to have been first observed by Descartes, and by Childrey in 16 but it did not attract general attention till it was noticed by Dominique Cassini, who gave it its present name. If we suppose the sun to have an atmosphere, as there is every reason to believe from the luminous aurora which appears to surround his disc in total eclipses (see *Sun*,) it must be very much flattened at its poles, and swelled out at the equator, by the centrifugal force of his equatorial parts. (See *Atmosphere*.) When the sun, t is below the horizon, a portion of this luminous atmosphere will appear like a pyramid of light above the horizon. The obliquity of the zodiacal light will evidently vary with the obliquity of the equator to the horizon; and in the months of February and March, about the time of the v equinox, it will form a very great angle with the horizon, and ought, therefore, to be seen most distinctly at that season of the year. But when the sun is in the summer solstice, he is in the p the ecliptic which is parallel to the equator, therefore, his equator, and consequently the zodiacal light, is more oblique to the horizon. La however, has made some objections to this t in his *Mécanique Céleste*; and Regnier is of opinion that it is owing merely to the refraction of the solar light by the earth's atmosphere.

ZOEGA, GEORGE, a Dane, one of the greatest antiquarians of our time, was born December 20, 1755, at Dahler, a village in Jutland, where his father was a clergyman. In 1772, he entered the gymnasium of Altona, and, in 1773, the university of Göttingen. In 1776, he travelled through Switzerland and Italy, and lived during the winter in Leipsic. In 1777, he returned to his parents, and remained until 1778 in Copenhagen. He now became a tutor, and went, in 1779, with his pupil, to Göttingen, and again to Italy. In 1782, he made a third journey to Italy. On his return, having heard in Paris of the change of ministry in Copenhagen, he resolved to go back to Rome, and reside there the rest of his life. In 1787, he became a Catholic, in order to be able to marry the daughter of the painter Pietruccioli. Zoëga undoubtedly received his first impulse to a profound investigation of antiquity from Winckelmann. He lived entirely with the ancients; and no modern characters or events exerted such an influence over him. In early youth, he had an inclination to melancholy, and his temper was irritable; but he overcame these propensities, and the serene tranquillity of the Greek character took possession of his soul. He was kind, and had a noble heart. He observed strictly the external forms of religion. When he arrived in Rome, professor Adler presented him to cardinal Stefano Borgia, whose favour and patronage he soon obtained. This cardinal had a great fondness for Egyptian antiquities, of which he possessed a rich collection. Zoëga, who was acquainted with the Coptic language, soon began to explain the ancient monuments. In 1787, he published an account of a complete collection of Egyptian coins, with full illustrations. The general approbation bestowed on this work, which furnished important contributions to history and chronology, attracted the attention of Pope Pius VI., and he employed Zoëga in the explanation of the obelisks. In 1797, he published, at the expense of the pope, his great work on the obelisks—*De Origine et Usu Obeliscorum* (Rome, 1797)—which procured him [illegible] reputation. The *Museo Borgiano Veliterno* is rich in Coptic manuscripts. Zoëga undertook the difficult task of explaining them, and, in 1810, the fruits of this immense labour were given to the public. Zoëga wrote, in the German language, an archæological Guide through Rome; and himself accompanied the most distinguished travellers through the city. A treasure of rare knowledge is contained in his *Li Bassirilieve antichi di Roma, incisi da Tom. Piroli colle Illustrazioni di Giorgio Zoëga*, in two folio volumes (Rome, 1808). He regretted, at a later period, that he had not devoted to Grecian antiqnities the time which he had given to the Egyptian. The Danish government appointed him its consul-general for the States of the Church; and, a few days after his death, a [illegible] of the Danebrog order, intended for him, arrived in Rome. He was professor of the university of Kiel, and member of the academies of Copenhagen, Göttingen, Berlin, Siena, Florence, Rome, &c. He died February 10, 1809. He had eleven children, but three only survived him, who are supported by the Danish government. Mr Niebuhr, the historian, offered a prize, some years before his death, for the best essay on Zoëga and his productions.

ZOILUS; the name of a Thracian rhetorician, whose hypercriticisms on the works of Homer have given him a very unenviable kind of distinction with posterity. He was a native of the town of Amphipolis, said to have been born about 270 years before the Christian era, and studied under Polycrates, himself an abusive and illiberal critic. The appellation by which Zoilus delighted to be known, was Homero-mastyx, although his censures were by no means confined to the writings of the great father of epic poetry, but extended indiscriminately and impartially to those of Demosthenes, Aristotle, Plato, and all others whose works came under his lash. His very name has now become a proverb, as applied to all illiberal and captious pretenders to criticism. The period of his death, which was a violent one, is unknown: indeed, the precise era in which he lived is not absolutely determined, Vitruvius making him contemporary with Ptolemy Philadelphus, while Ælian refers him to the ninety-fifth Olympiad.

ZOISITE. See *Epidote.*

ZOLLIKOFER, GEORGE JOACHIM, one of the most eminent preachers of the last century, was born at St Gall, in Switzerland, August 5, 1730. He studied at the gymnasia of Frankfort on the Maine, and of Bremen, and at the university of Utrecht, and, in 1754, became a clergyman at Morat, in Switzerland. In 1758, he accepted an invitation from a congregation at Leipsic, and remained in this situation until his death, January 20, 1788. During these thirty years, he did great good, not only in his congregation, but also among the students of the university in Leipsic. Two hundred and fifty of his sermons have appeared in print. From 1769 to 1788, he published four collections, in six volumes, which went through several editions. After his death, his remaining sermons were published in nine volumes. The whole of his sermons have been published in fifteen volumes (Leipsic, 1789—1804). Two volumes have of late been translated into English, by reverend W. Tooke; also a small volume of his Devotional Exercises. Zollikofer also published a Hymn Book (eighth edition, Leipsic, 1786), besides translations of some English and French works. Garve wrote on the character of Zollikofer (Leipsic, 1788).

ZONARAS, JOHN; a monk of St Basil, by birth a Greek, who lived during the latter part of the eleventh and the commencement of the following century. Before he renounced the world for the cloister, he had filled some distinguished offices about the imperial court, but becoming, at length, disgusted with its intrigues, gave himself up to a religious life, employing his leisure hours in the compilation of a History of the World, from the Earliest Periods to the Year 1118. In this work (of which an edition appeared at Paris, in two folio volumes, 1687), he follows, principally, the narrative of Dion Cassius; and all the earlier part of the book is a tissue of fable; but, as he approaches his own times, he becomes more entitled to attention, as all his mistakes arise evidently more from ignorance than design. There is also extant a commentary on the apostolic canons by him. His death took place about the year 1120.

ZONE. The whole surface of the earth is divided into five zones—the torrid, northern and southern temperate, and northern and southern frigid zones. The torrid zone extends 23½° north and south of the equator; and twice a year, the sun shines vertically on its inhabitants. This zone is bounded, on both sides of the equator, by the two tropics; that is, the circles in which the sun reaches its greatest distance from the equator. As the rays of the sun here are nearly vertical, a perpetual summer reigns, and day and night, under the equator, are always equal; and even at the tropics, the difference is scarcely an hour. Owing to the nature and situation, however, of the countries in this zone, the heat is not every where the same. The warmest portions are the sandy deserts of Africa; far more temperate are the happy islands of the South seas, and still milder the climate of Peru. This last country contains mountains from whose summits the vertical sun-beams never melt the perpetual snow. The two temperate zones extend from the tropics to the polar circles. They contain the most populous countries, and the climate is various. As the distance from the tropics increases, the heat diminishes, the difference of the seasons becomes greater, the days and nights become more unequal, until we arrive at a point where, once a year, the sun does not appear above the horizon during the twenty-four hours, and, once a year, does not set for the same time. The circles passing through these points, parallel to the equator and the tropics, form the limits of the temperate zones, and are called the *arctic* and *antarctic circles*. The distance from the tropics to the polar circles, or the breadth of the temperate zones, both in the northern and southern hemispheres, is 43°. All beyond the polar circles, to the poles, is called the *frigid zones*. No land is known to exist in the southern frigid zone. The northern is habitable, though it produces neither grain nor trees, but only mosses, lichens, and a few bushes. The distance from the polar circles to the poles is 23½°; but no one has yet penetrated to the poles themselves. Cook sailed as far as the seventy-first degree of latitude, towards the south pole, which is still more inhospitable than the north, as its winters occur at the time of the earth's greatest distance from the sun. To the north, the eightieth degree has been reached. (See *North Polar Expeditions*.) The characteristic of the frigid zones is, that day and night are more and more unequal the nearer you approach the poles; and for days, and even weeks, the sun is above or below the horizon. See *Seasons*.

ZOOGENE (from ζωον, animal, and γενναω, to produce). On the surface of the thermal waters of Baden, in Germany, and on the waters of Ischia, an island of the kingdom of Naples, a singular substance is collected, which has been called *zoogene*. It resembles human flesh with the skin upon it, and, on being subjected to distillation, affords the same products as animal matter. M. Gimbernat (*Journal de Pharmacie*, April, 1821) has also seen rocks covered with this substance, in the valleys of Sinigaglia and Negropont. Salverte (*Des Sciences Occultes*, 1829, 2 vols., 8vo.) considers this fact as explaining the stories of showers of pieces of meat, which figure in the number of prodigies of antiquity.

The name of *zoogene* is also given to a substance obtained from bones, by a chemical process which was discovered by M. Gimbernat. Much of it was sent, in 1827, to Greece, and much of it also was used by the French army, on the expedition to Algiers.

ZOOLITHES (from ζωον, animal, and λιθος, stone): fossil animal remains, great numbers of which have been found in digging into the surface of the earth. They differ from petrifactions, which are organized bodies, penetrated with stony matter, or completely converted into stony masses, by the gradual removal of the organic matter, the place of which has been supplied by stony deposits. Zoolithes have been divided into six classes—*tetrapodolithes*, or fossil quadrupeds; *ornitholithes*, or fossil skeletons of birds; *amphibiolithes*, or fossil remains of the *amphibia*; *ichthyolithes*, or fossil fish; *entomolithes*, or fossil insects; and *helmintholithes*, or fossil worms. See *Geology*, and *Organic Remains*.

ZOOLOGY (from ζωον, animal, and λογος, doctrine); that part of natural history which treats of animals. It is not confined to a description of the external forms of animals, but embraces all the phenomena of life and animal motion; the internal organization of each individual part; the processes of digestion, assimilation, nutrition, secretion and reproduction; the wonderful instincts, the varied dispositions, and the different degrees of intelligence, manifested in the animal creation, from the half-vegetable zoophyte, up to man. Although it cannot be doubted that the attention of men was early attracted to an observation of the habits and nature of the lower order of animals, Aristotle seems to have been the first who furnished the world with any methodical information on this subject. His work Περι Ζωων Ἱστοριας contains a great number of facts and observations. He compares the organization of the lower animals, in its different parts, with that of man, and treats of their mode of generation, habits, organs, &c., with great clearness and sagacity; and his principal divisions of the animal kingdom are so well founded that almost all of them are still substantially admitted. Among the Romans, zoology does not appear to have been at all cultivated, until the time of Pliny, who is the only Roman zoologist worthy of notice. His work (*Historia Naturalis*) contains multitudes of original traits, though it is only a compilation, and describes the habits and dispositions of animals with great felicity. He adopted, without examination, many fabulous stories, and too often neglected important details. Ælian (q. v.) was far inferior to the above-mentioned writers, and his Natural History of Animals may be considered as the source of the falsehood and error which so long disgraced this branch of natural history. Apuleius, and Athenæus the grammarian, are the only names that deserve mention, from the time of Ælian and Pliny to the beginning of the sixteenth century; and they added nothing to the stock of zoological science. At this latter period, flourished, among others, Belon, a French physician, who made the closest approach of any author of that time to any thing like systematic classification, in his *De Aquatilibus*, and particularly in his *De la Nature des Oiseaux* (Paris, [illegible] folio); Salviani, author of a treatise, *Aquatilium Animalium Historia* (Rome, 1554, folio), which is superbly illustrated; Conrad Gesner, whose *Historia Animalium* (Zürich, 1550—1587, 4 vols., [illegible] arranged in alphabetical order, forms the foundation of modern zoology; and Aldrovandi, the most laborious of compilers, who devoted [illegible] years to his work on natural history, in [illegible] volumes, folio, of which the greater part was published after his death. These earlier writers were followed, in the next century, by Redi and Swammerdam, to whom entomology is so much indebted, and by Ray (q. v.), the first naturalist, from the time of Aristotle, who produced any thing like a scientific arrangement. The works of Ray, [illegible] his own name, are *Synopsis Quadrupedum et Serpentum* (1683, 8vo.); *Synopsis Avium et Piscium* (1713); and *Historia Insectorum*; and he [illegible] considered to have had a large share in the compositions of his pupil Willoughby. But it was reserved for Linnæus to raise natural history to the rank of a science. Gifted with extraordinary powers of invention and discrimination, a most retentive memory, an unrelaxing industry, and the most ardent zeal in the cause of science, this great man observed, with the acutest sagacity, the subtilest affinities of organized nature. The general character of his works is order, precision, clearness, exactness of description, and an accurate knowledge of relations in detail. Buffon adorned natural history with the charms of eloquence, and was the first who extended its popularity beyond mere scholars and men of science. He was occasionally carried by the force of his imagination, into unfounded hypotheses; yet he had a truly philosophical spirit, could observe facts, and compare results, and possessed extensive information. The four great naturalists whom we have had occasion to mention, have exhibited nature under different aspects. Aristotle has shown us the profound combination of its laws; Pliny its inexhaustible riches; Linnæus its wonderful details; and Buffon its majesty and power. Since the time of Buffon, all the departments of zoology have been cultivated with a zeal, a minute accuracy, and an extensiveness of research, before unequalled. Our limits will not allow us to mention all those who have distinguished themselves in the cultivation of the whole field of the science, much less those who, confining themselves to particular branches of it, have yet rendered most important services by the exactness of their researches and the novelty of their views. Among the Germans, Illiger and Blumenbach hold the first rank as zoologists; but it is to France that we are chiefly indebted for the strong impulse which has been given, in our times, to the progress of natural science, and of zoology in particular. The name alone of Cuvier, whose recent death (1832) science deplores, sufficiently indicates the brilliant triumphs of natural history in that country. We have already treated, at some length, of some parts of this extensive subject, under the general heads *Animals*, *Anatomy*, and *Physiology*, and of the nomenclature of particular classes of animals under those of *Insects*, and *Entomology*, *Conchology*, *Fishes*, and *Ichthyology*, *Ornithology*, *Reptiles*, *Serpents*, &c.; and we shall now proceed to give some notice of the principal methods pursued by eminent zoologists, with a particular view of mastology,[*] or the classification of the mammiferous animals.

The immense number of facts embraced by natural history could never be retained in the memory without an arrangment of divisions and subdivisions founded upon some distinguishing characteristics. Aristotle's system of arrangement was simple, resting on divisions derived mainly from the external structure, food, habits and locality. But though neither human nor comparative anatomy was then sufficiently cultivated to enable him to make the internal structure of animals the basis of his divisions, yet Aristotle was not insensible to the advantages of a more scientific distribution, and, with his usual sagacity, recommends to succeeding writers to turn their attention in that direction. Ray followed the advice of the great master, and retained the great distinction, that some animals possessed lungs and a sanguineous system, while others were destitute of both. Linnæus, proceeding on the general arrangement of Ray, but with many omissions and improvements, divided the animal kingdom into six classes, founded mainly on the differences in the respiratory and sanguineous systems.

Class I.—*Mammalia*. All suckle their young; the heart has two auricles and two ventricles; blood red and warm; viviparous.

Class II. *Aves* (Birds). Characters of sanguineous system as in first class; viviparous.

Class III. *Amphibia*. Heart one auricle and one ventricle; blood red and cold; respiration voluntary.

Class IV. *Pisces* (Fishes). Heart and blood as in *amphibia*; respiration by gills.

Class V. *Insecta*. Heart one ventricle and no auricle; sanies cold, colourless; antennæ, or feelers.

Class VI. *Vermes* (Worms). Characters as in V., except no antennæ, but tentacula.

He then subdivides the *Mammalia* into seven orders, the distinctions of which are taken from the difference in the number, form and situation of the teeth, without, however, neglecting the feet.

Order 1. *Primates*. Four incisors in each jaw, and one canine.—Genera: *homo*, *simia*, *lemur*, *vespertilio*.

Order 2. *Bruta*. No incisors.—Genera: *rhinoceros*, *elephas*, *trichechus*, *bradypus*, *myrmecophaga*, *manis*, *dasypus*.

Order 3. *Feræ*. Six conical incisors in each jaw, for the most part.—Genera: *phoca*, *canis*, *felis*, *viverra*, *mustela*, *ursus*, *didelphis*, *talpa*, *sorex*, *erinaceus*.

Order 4. *Glires*. Two incisors in each jaw; no canines.—Genera: *hystrix*, *lepus*, *castor*, *mus*, *sciurus*, *myoxus*, *cavia*, *arctomys*, *dipus*, *hyrax*.

Order 5. *Pecora*. No fore-teeth in the upper jaw; six or eight in the under.—Genera: *camelus*, *moschus*, *giraffa*, *cervus*, *antilope*, *capra*, *ovis*, *bos*.

Order 6. *Belluæ*. Obtuse fore-teeth in each jaw.—Genera: *equus*, *hippopotamus*, *sus*, *tapir*.

Order 7. *Cete*. No uniform character of teeth; aquatic pectoral fins; spiracula.—Genera: *monodon*, *balæna*, *physeter*, *delphinus*.

The other classes are subdivided in a similar manner. We shall enumerate only the orders. The distinctions of the *Aves* are taken chiefly from the beak; but the tongue, nostrils, feet, and other parts, are sometimes called in.

Order 1. Accipitres.
——— 2. Picæ.
——— 3. Anseres.
——— 4. Grallæ.
——— 5. Gallinæ.
——— 6. Passeres.
(See *Ornithology*.)

The *Amphibia* are divided into two orders.

Order 1. *Reptilia*. Furnished with feet, and breathing through the mouth. See *Reptiles*.

Order 2. *Serpentes*. Destitute of feet, and breathing through the mouth. See *Serpents*.

The fourth class, *Pisces*, is subdivided into six orders, the characters of which are taken from the belly-fins.

Order 1. *Apodes*. No ventral fins; embraces the eel kind, torpedo, &c.

Order 2. *Jugulares*. Ventral fins placed before the pectoral; cod, blenny, &c.

Order 3. *Thoracici*. Ventral fins under the pectoral; sucking-fish, goby, plaice, doree, &c.

Order 4. *Abdominales*. Ventral fins placed behind the pectoral; skate, salmon, pike, &c.

Order 5. *Branchiostegi*. Gills destitute of long rays; sun-fish, pipe-fish, &c.

Order 6. *Chondropterygii*. Cartilaginous gills; lamprey, ray, shark, &c.

The fifth class, that of *Insects*, is divided into seven orders, the characters of which are mostly taken from the differences observed in the number and texture of the wings

ORDER 1 Coleoptera.
——— 2. Hemiptera.
——— 3. Lepidoptera.
——— 4. Neuroptera.
——— 5. Hymenoptera.
——— 6. Diptera.
——— 7. Aptera.

The sixth class, *Vermes*, is subdivided into five orders.

ORDER 1. Intestina.
——— 2. Mollusca.
——— 3. Testacea.
——— 4. Zoophyta.
——— 5. Infusoria.

The arrangement of Linnæus, with all its advantages, had its defects. By confining himself too much to one kind of character, he often throws together subjects widely remote in their general appearance and economy; but he has carried the art of distribution, and the management of characters, to such a degree of clearness and brevity, that any person familiarized to his language may easily find the name and place of any being he wishes to observe. It still remained a desideratum to arrange the facts, of which the science treats, in a series of propositions, so graduated and successively subordinate, that the whole might represent the actual relations of living beings. For this purpose, it was necessary to group animals according to their different properties or organizations, so that those contained in such a group should bear a stronger natural resemblance to each other than to any individual of a different group. This arrangement is termed the *natural* method, for the formation of which zoology offers great facilities. In the arrangement of Cuvier, the completest and most scientific yet presented to the world, the great division of the animal world rests on the nervous and sensorial, and not on the circulatory and respiratory, systems. From the study of the physiology of the natural classes of vertebrated animals, Cuvier discovered the respective quantity of respiration, the reason of the quantity or degree of motion, and, consequently, the peculiar nature of that motion. This last gives rise to the peculiar form of their skeletons and muscles; and with it, the energy of their sensations, and the force of their digestion, are in a necessary relation. Thus zoological arrangement, which had hitherto rested on observation alone, assumed a truly scientific form. Calling in the aid of comparative anatomy, it involves propositions applicable to new cases, and thus becomes a means of discovery as well as a register of facts; and, by correct reasoning, founded on copious induction, it partakes of the demonstration of mathematics, and the certainty of experimental knowledge. Having examined the modifications which take place in the organs of circulation, respiration and sensation in the invertebrated animals (a title first given by Lamarck, instead of the erroneous one of *white-blooded* animals, by which they were previously distinguished), Cuvier has formed a new division, in which these animals are arranged according to their actual relations.

The following is a view of the system as exhibited in the second edition of the *Règne Animal*, published in 1829 (5 vols., 8vo.). Of the four great divisions into which the animal kingdom is divided—*Vertebrated*, *Molluscous*, *Articulated*, and *Radicated* animals—and of their general subdivisions, an account is given in the article *Animal*.

The first subdivision, of the class *Mammalia*, is again subdivided into eight orders, as follows:—

ORDER I.—BIMANA.

Having hands at the anterior extremities alone.
One species—man.

ORDER II.—QUADRUMANA.

Having hands at the four extremities.

Simia (Monkey).
Ouistiti.
Makis, or *Lemurs.*

ORDER III.—CARNASSIERS.

FAMILY I.—CHEIROPTERA.

Vespertilio (Bat).
Galeopithecus.

FAMILY II.—INSECTIVORA.

Erinaceus (Hedgehog).
Tendrac (*Centenes*, Illig.).
Cladobates (Tupaia.)
Sorex (Shrew).
Mygale (Desman).
Chrysochloris.
Talpa (Mole).
Condylura.
Scalops (Shrew-Mole).

FAMILY III.—CARNIVORA.

TRIBE I.—PLANTIGRADE.

Ursus (Bear).

TRIBE II.—DIGITIGRADE.

Mustela (Marten).
Canis (Dog).
Viverra (Civet).
Hyæna.
Felis (Cat).

TRIBE III.—AMPHIBIOUS ANIMALS.

Phoca (Seal).
Trichechus (Morse).

ORDER IV.—MARSUPIAL ANIMALS.

Didelphis (Opossum),
Dasyurus.
Phalangista.
Potoroos (*Hypsiprymnus*, Illig.)
Macropus (Kangaroo.)
Koala (*Lipurus*, Goldf.) *Phascolarctos.*
Phascolomys (Wombat).

ORDER V.—GLIRES (RODENTIA).

Sciurus (Squirrel).
Mus (Rat).
Helamys (*Pedetes*, Illig.).
Spalax.
Orycterus.
Geomys (*Pseudostoma*, Say).
Diplostoma.
Castor (Beaver).
Couia (*Myopotamus*, Comm.).
Hystrix (Porcupine).
Lepus (Hare).
Cavia (Guinea Pig).

ORDER VI.—EDENTATA.

TRIBE I.—TARDIGRADE.

Bradypus (Sloth).
Megatherium (fossil).

TRIBE II.—COMMON EDENTATA.

Dasypus (Tatou).
Orycteropus.
Myrmecophaga (Anteater).
Manis (Pangolin).

TRIBE III.—MONOTREMA.

Echidna (Spinous Anteater).
Ornithorhynchus (*Platypus*, Shaw).

ORDER VII.—PACHYDERMATA.

FAMILY I.—PROBOSCIDIANA.

Elephas.
Mastodon (fossil).

FAMILY II.—COMMON PACHYDERMATA.

Hippopotamus.
Sus (Hog).
Phacochœrus.
Dicotyles (Peccary).
Anoplotherium (fossil).
Rhinoceros.
Hyrax.
Palæotherium (fossil).
Lophiodon (fossil).
Tapir.

Family III.—Soliped.

Equus (Horse).

Order VIII.—Ruminantia.

(Without horns.)

Camelus.
Moschus.

(Horned.)

Cervus (Deer).
Camelopardalis (Giraffe).
Antilope.
Capra (Goat).
Ovis (Sheep).
Bos (Ox).

Order IX.—Cetacea.

Family I.—Herbivorous.

Manatus (Lamantin).
Dugong (*Halicorus*, Illig.)
Stellerus (*Rytina*, Illig.)

Family II.—Common Cetacea.

Delphinus (Dolphin).
Narwhal (*Monodon*, L.).
Cachalot (*Physeter*, L.)
Balæna.

Class II. *Aves.* See *Ornithology.*
Class III. *Reptiles.* See *Reptiles.*
Class IV. *Pisces.* See *Ichthyology.*

The second general division of Cuvier comprises the *molluscous* animals (see *Conchology*), the third the *articulated* animals (see *Entomology*), and the fourth the *radiated* animals (see *Zoophytes*).—Consult Fleming's *Philosophy of Zoology* (2 vols., Edinburgh, 1822), and Griffith's *Animal Kingdom of Cuvier, with additional Descriptions*, (London, 1827, et seq. 5 vols., 8vo.)

ZOOPHITE (from ζωον, animal, and φυτον, plant), in a wider sense, comprises the five classes of animals included by Cuvier in the fourth great division of the animal kingdom, to which he gives the name of *radiated* animals, from their often exhibiting a radiated form of the whole body, or of some of its parts. We have described the general characters of this division, and the five classes of which it consists, in the article *Animal.* They are termed *apathica* (α, without, παθος, feeling) by Lamarck, from their all being destitute of organs of sense, and even of nerves, and from his considering their motions to be mere automatic phenomena, not accompanied with feeling. They form the division called *acephala* (α, without, κεφαλη, head) by Latreille, from their having no part analogous to the head of the articulated classes. In a narrower sense, the term is applied to the fourth class of this division, which we have described at great length in the article *Polypi.*

ZOOTOMY. See *Anatomy.*

ZOPYRUS; a Persian, son of Megabyzus, who, to show his attachment to Darius, the son of Hystaspes, while he besieged Babylon, cut off his ears and nose, and fled to the enemy, telling them that he had received such treatment from his royal master because he had advised him to raise the siege, as the city was impregnable. This was credited by the Babylonians; and Zopyrus was appointed commander of all their forces. When he had totally gained their confidence, he betrayed the city into the hands of Darius, for which he was liberally rewarded. Darius used to say that he had rather have Zopyrus not mutilated than twenty Babylons.

ZORNDORF, Battle of; the bloodiest, and in many respects, one of the most remarkable battles in the seven years' war, fought on Aug. 25, 1758, between the Prussians commanded by Frederic the Great, and the Russians under general Fermour, the latter 50,000 men strong, the former 30,000. Frederic was victorious. The Russians lost towards 19,000 killed, and 3000 taken prisoners; the Prussians 10,000 killed. Frederic was obliged, immediately after, to hasten to Saxony.

ZOROASTER, or ZERDUSHT; the distinguished reformer of religion in Media, whose doctrines also spread into Persia. There are no certain accounts of him: his history is mostly enveloped in darkness. It is highly probable that he was by birth a Median, and lived under the Median king Gustasp, who, according to Hammer, was the same as Darius Hystaspes, but, according to others, Cyaxares I. If the last supposition is correct, he lived not much before the time of Cyrus. The religion introduced by him ought not to be considered as entirely new. From the investigations of Hammer, it would appear that pure fire-worship (in which, however, the fire was only symbolical) was the oldest religion of the Bactro-Median race; and from this the worship of the planets sprung. Zoroaster refined this fire-worship. It is not settled whether his improvements were, at first, adopted by the magi only, or whether they were received by the Medians generally, and afterwards communicated by them to the Persians, their conquerors. The latter supposition has much in its favour, particularly the circumstance that the Persians showed a great readiness to adopt foreign religions, which may have arisen, in a great measure, from their deification of the powers of nature. Shortly after the time of Socrates, the religion of Zoroaster had spread throughout Persia.

The following are its principal doctrines:—From eternity there have existed two beings, Ormuzd and Ahriman, the principles of the universe. Ormuzd is pure, eternal light, the original source of all perfection. The nature of Ahriman, likewise belonged originally to light; and so far he was good, but because he envied the light of Ormuzd, he obscured his own, became an enemy of Ormuzd, and the father of evil and of all bad beings, who join with him in a contest with the good. Ormuzd and Ahriman performed the work of creation at different epochs, and brought into existence various species of beings. Ormuzd created, by his living word, that is, the power of his will, the community of good spirits—first, six immortal spirits of light, for the service of his throne (Amshaspand); then twenty-eight subordinate spirits, representatives of the months and days; and, at last a multitude of human souls. Ahriman produced a number of bad spirits, six arch-devs, spirits of darkness, and innumerable devs of lower rank. The good dwell with Ormuzd in light. Ahriman lives with his creatures in the kingdom of darkness. 3000 years Ormuzd ruled alone; after which he created material beings, in their various degrees; at last, man, and, after the labour, celebrated the first festival of creation with the good spirits. Again he ruled in this world of innocence and happiness 3000 years. In the next period of equal length, begins the contest between light and darkness, Ormuzd and Ahriman, who, in a continual struggle, divide the dominion of the world. The following 3000 years extend and confirm the power of Ahriman: afterwards his power declines; the devs sink to nothing; their former prince does homage to Ormuzd; the bad disappear. The dead arise; the primitive kingdom of happy souls, under the government of Ormuzd, returns.

Thus the world is made to continue 12,000 years. The twelve signs of the zodiac play a part: to each is assigned a thousand years. The number seven, as presented in the seven amshaspands, and seven arch-devs, including Ormuzd and Ahriman, refers to the planets. The subordinate genii of the material world are the personified parts and elements of nature. The spirits of men pass through a state of happiness before they reach the body; and, in that heavenly state, contend with bad spirits, protect the good upon earth, and are reverenced by them. Men themselves are either the servants of Ormuzd, through wisdom and virtue, or the slaves of Ahriman through folly and vice. The former pass, after death, over the bridge Shinevad, into the dwelling of the happy; the latter fall into hell. When Ahriman is conquered, the resurrection of the body follows, and the earth is adorned for the residence of the virtuous.

The essential doctrines of Zoroaster are found in the *Zend-Avesta*, the most sacred record of his religion. The discovery of this ancient monument by Anquetil du Perron, did not, at first, receive credit. He left Paris in 1755, to investigate the religion of all the nations of Asia not professing the Mohammedan faith, particularly the inhabitants of India—an undertaking which he successfully executed notwithstanding numerous obstacles. (See *Anquetil du Perron.*) At Surat, he obtained, from some learned Persians, a copy of the books of the *Zend-Avesta*, in the Zend and Pehlvi languages. The latter he studied himself, and translated in conjunction with learned natives, the *Zend-Avesta* into modern Persian. Having returned to France, he gave to the library in Paris the manuscripts which he had collected in India, and published a translation of the *Zend-Avesta* into the French language, with notes. The celebrated Orientalist, Sir William Jones, expressed himself warmly against the extraordinary account of Anquetil; but Kleuker, the German translator of the *Zend-Avesta*, has combated the doubts entertained on the subject with much force. Late inquiries into the religions of antiquity, particularly those which relate to India, have illustrated many points in the doctrines of Zoroaster. The literary treasures which the celebrated linguist Rask, has lately brought from India, promise new light, and tend to confirm the genuineness of the *Zend-Avesta*. (See *Zend-Avesta*.) But the books which are known under the name of the Oracles of Zoroaster, and which have stood in high repute, particularly among mystics, and students of the secret sciences, by which men hoped to discover the philosopher's stone, are, obviously, forgeries of a later period.

ZRINYI, OR ZRINI, NICHOLAS, count of, general of the emperor Ferdinand I., ban of Croatia, Dalmatia, and Sclavonia, a modern Leonidas, was born in 1518. When but a boy of twelve years, he distinguished himself so much during the siege of Vienna that Charles V. gave him a horse and gold chain. He also distinguished himself in the wars against John of Zapolya, and sultan Suleyman (Soliman), the ally of Zapolya, and did much to improve light cavalry. His noble figure, his vivacity, liberality, and strict justice, gained him the love of his soldiers to an uncommon degree. In 1542, at the battle of Pesth, his sudden arrival struck dismay into the enemy, and decided the victory. For twelve years he defended Croatia, over which he presided as ban, against the Turks, and repelled them, in 1562, from Szigeth. The greater part of Hungary, however, was already a Turkish pachalic, and the rest was obliged to pay tribute. Suleyman the Invincible was desirous of taking Szigeth. A defeat which the vanguard of the sultan sustained, at Siklos, from the troops of Zrinyi, excited his wrath. The famous grand vizier, Mehmed Sokolowich, a renegade of Croatia, marched with 65,000 men, to the attack of Szigeth. A bridge was thrown over the swollen Drave, under difficulties such as could be overcome only by the iron will of the Turkish despot; and the army passed over the river between August 1 and 9. Zrinyi collected his soldiers, 2500 in number. They swore—first he himself, then each soldier to his captain, and then all the captains to him—to die for their faith, their emperor and their country. Szigeth lies between two rivers, as on an island. When Zrinyi mustered his troop, they amounted to 3000 men. The Turks bombarded day and night, the "old city," which was but slightly fortified. The besieged made many daring sallies; but, after they had defended the place, inch by inch, and repulsed several assaults, they were obliged to burn it, and to retreat to the "new city." The Turks now raised mounds of earth, from which they could fire over the whole city. Zrinyi made every effort to prevent the Turks from filling up the fosse; but they were too numerous and indefatigable. He now gave up the "new city" to the flames, and threw himself into the castle. The fire of the Turks was incessant, and they were also active in excavating mines. Zrinyi had no miners. The Hungarians made a sally, repulsed the Turks, spiked several of their cannons, but suffered a considerable loss. From August 26 to September 1, seven assaults, or more, were made daily; but the Hungarians always drove back the Turks. Many proposals for capitulation were made to Zrinyi; but he rejected them all; and even the sultan's threat to kill his son, whom the Turks pretended to have in their power, could not change his purpose. Soliman, exasperated at his obstinacy, offered 1000 gold guilders for Zrinyi's head, and finally died of rage, September 4. The grand vizier kept his death a secret. September 5, the Turks succeeded in burning the outer castle. Zrinyi retired to the inner works. These, however, contained no provision nor ammunition. On the 7th the Turks undertook a general assault. The cinders fell even into the apartments of the count. The castle was in flames. Zrinyi now assembled his followers, and said, "Remember your oath. We must go forth, or burn, or perish with hunger. Let us die like men. Follow me, and do as I do." Saying this, he rushed out: his men, now reduced to 600, followed. He received two balls, but continued fighting until a third ball killed him. The whole garrison shared the fate of their commander. The Turks thronged into the burning castle, but Zrinyi had fired trains leading to the powder chambers. These exploded and a large number of the enemy perished. Above 20,000 Turks had been killed or died of sickness during the siege. The Turks retained the place until 1689. The aga of the janizaries fixed the head of Zrinyi before the tent of the sultan; but it was afterwards sent to the imperial general count Salm. The family of the Zrinyis became extinct in 1702.

ZUG, the smallest of the Helvetic cantons, lies between the cantons of Zürich, Schweitz, Lucerne and Aargau. It has a superficial area of 116 square miles, and contains 14,710 inhabitants, of German origin, and of the Roman Catholic religion.

regard to its natural characters, it may be divided into two distinct parts, of which the north western is composed of fertile valleys, and the south eastern of a mountainous land, in which, however, none of the summits rise above an elevation of 5000 feet, and the descent is gentle. A considerable part of the surface is occupied by lakes Zug and Egeri. The inhabitants are employed almost exclusively in the breeding of cattle, and the cultivation of orchards. The constitution is democratic, the supreme power being exercised by popular representatives in different bodies. The quota of the canton in the army of the confederacy is 250 men, and the pecuniary contingent 1250 Swiss francs. The chief place is the town of the same name, with 2800 inhabitants, on lake Zug, in a delightful situation, at the foot of a mountain of the same name, surrounded by fertile meadows, orchards, vineyards, and pretty country houses. The lake bathes the foot of Righi on the south; behind rises mount Pilate; and, in the distance, the snowy summits of the Bernese Alps are seen towering up into the sky. The lake is about ten miles long and from two to three wide.

ZUIDERSEE, or ZUYDER-ZEE (i. e. *South-sea*); an inland sea or gulf of the North sea, or German ocean, surrounded chiefly by the Dutch provinces of Holland, Overyssel, and Friesland. Its length from north to south, is about 80 miles; its breadth varies from 15 to 30; superficial area, 1200 square miles. It is said to have been, in remote ages, a lake, until the barrier on the north-west, separating it from the German ocean, was swallowed up by some inundation of the sea. This opinion is confirmed by the position of the islands Texel, Vlieland, &c., which, with intervening shoals and sand banks, still form a kind of defence against the ocean. The trade of Amsterdam is carried on along the Zuyder-Zee, the entrance to which is at the Texel. The communication of this sea with the lake of Harlem is by the south, the inlet on the banks of which Amsterdam is built. In so level a country there are few rivers to flow into this sea: of those that do so, the Yssel is the largest. The extent of the Zuyder-Zee exposes it to great agitation in tempestuous weather; yet, on proceeding from South Holland to Friesland, it is usual to sail across the southern part of it, called the Lemmer, instead of making the circuit by land. The Y is a gulf of the Zuyder-Zee, which forms the connexion with the lake of Harlem, and of which a part is called the Pampus.

ZUINGLIUS. See *Zwingli.*

ZÜLLICHAU, a town in the government of Frankfort, in the Prussian province of Brandenburg, 112 miles from Berlin, 17 miles east of Crossen, lon. 15° 44′ E.; lat. 52° 8′ N., a league from the Oder, has 4700 inhabitants, an academy, an orphan asylum, and a seminary for schoolmasters. (See *Schools.*) It was formerly a thriving town, having many manufactories of broadcloth, large quantities of which were sent into Poland, Russia, and even China; but since Russia has protected the Polish manufactures, Züllichau has much declined. The manufacture of silk, however, has in some measure supplied the place of that of cloth. On the banks of the Oder, much wine is made; but its quality is less to be commended than the industry of the cultivators. The town belongs, with the circle of the same name (300 square miles, with [illegible] inhabitants), to the duchy of Crossen, which, in [illegible], fell to Brandenburgh.

ZUMBO. See *Wax Figures.*

ZUMSTEEG, JOHN RUDOLPHUS, a German composer, was born in 1760, in Sachsenflur, in Würtemberg, and educated in the ducal school near Stuttgart, enjoyed the instruction of the members of the ducal chapel, and, when yet a pupil, composed several operettas, cantatas and songs for the Robbers of Schiller, whose friend he was. He was then appointed violoncellist in the chapel of the duke, and, in 1792, concert-master and director of the opera. He died in 1802, of apoplexy. His songs and glees are some of the best which the Germans possess. He also composed operas and a mass, &c.

ZURICH; a canton of Switzerland, bounded north by Schaffhausen, north-east and east by Thurgau, south-east by St Gall, south by Schweitz and Zug, west by Aargau, and north-west by Baden (see *Switzerland*); square miles, 953; population, 224,150. The general aspect is pleasant, abounding in hills and valleys, but destitute of the magnificent scenery that marks the interior and south of Switzerland. The climate is mild, and the soil is tolerably fertile, and well cultivated. Rich pastures and extensive orchards abound, and, in some parts, there are fine tracts of wooded country. Corn, wine, cattle, butter and cheese are some of the principal products. The manufactures are considerable, of cotton, silk stuffs, linen, woollen, and leather. The inhabitants are of German origin, and, with the exception of two societies, are Calvinists. The government, which was aristocratico-democratic in its administration, was new-modelled in 1831. The legislative power was vested in a great council of 212 members, 25 of whom formed an executive council, and court of final appeal.

ZURICH; a city of Switzerland, capital of the above canton, on the Limmat, at the north extremity of the lake of Zürich, in a narrow valley, between hills, thirty-six miles south-west of Constance, fifty-five north-east of Berne; lon. 8° 32′ east; lat. 47° 22′ north. It is pleasantly situated, fortified with a wall and ditch, tolerably neat and clean, though most of the houses are old-fashioned. It has four Reformed churches. Its public buildings are not remarkable, but the scenery around is striking, and there are beautiful promenades. There are numerous private gardens; and in no place in Europe, except Haarlem, is more attention paid to fine flowers. Having the advantage of water communication by means of its lake and river, it has long been a place of manufacture and trade. Woollens, linens, cottons, leather, and silk, are its chief manufactures. Few places of the size of Zürich have surpassed it in the cultivation of literature. For five centuries it has been a town of literary distinction. It has a public library of 40,000 volumes, *collegium humanitatis*, *gymnasium Carolinum*, a school for the deaf and dumb, and one for the blind, a society of physics, economics, and natural history, a military school, a medical seminary, and various other institutions. Natives, Conrad Gesner, Solomon Gesner, John James Gesner, J. C. Lavater, Hirzel, and Pestalozzi. Population, 14,000. Zürich has, in recent times, been the theatre of some interesting political events. In the war carried on by the second coalition against the French republic (1799), Zürich became an important point in the military operations. On the fourth and fifth of June, the archduke Charles gained some advantages over the French forces here, and, on the seventh, occupied Zürich. In August, it became the theatre of new conflicts;

and, on the twenty-fourth of September, Masséna defeated here the allied forces of Russia and Austria, and compelled them to evacuate Switzerland.

ZURICH; a lake of Switzerland, extending, in the form of a crescent, chiefly through the canton of Zürich, but partly also between those of Schweitz and St Gall. It is divided into two parts by the strait of Rapperswyl, a quarter of a mile over, crossed by a bridge. In other places, the breadth varies to nearly five miles. The length is thirty miles. This lake, without rivalling that of Geneva in its sublime scenery, is one of the finest in Europe, being surrounded by a populous and well cultivated country, and the prospects on its banks being richly varied. Behind and above the vine-covered hills which enclose it, loftier summits rise gradually higher and higher, till the eye finally rests on the glaciers of Glarus, Schweitz, and the Grisons. The prospect is finest from the lake itself, where, as you sail along, the scene is ever shifting and changing. Upon the little island of Ufnau, was formerly seen the tomb of Von Hutten, who died here in 1523.

ZURLITE; an imperfectly described mineral, found in Mount Vesuvius, with calcareous spar. It occurs in rectangular prisms, or in botryoidal masses, of an asparagus-green colour. It yields to the knife, but emits sparkles with steel. Specific gravity, 3·274; melts with borax into a black glass.

ZURLO, GIUSEPPE, COUNT DE; an Italian politician, born, in 1759, at Naples. In 1783, when an earthquake had devastated many parts of the kingdom, and men of merit were wanted to heal the wounds of the provinces, Zurlo was sent into Calabria. He was afterwards made judge, and, in 1798, was invited to become minister of finance; but he declined the offer. The king, however, when he fled to Sicily, left him in the administration of the finances. The people, entertaining unfounded suspicions against him, seized his person, and destroyed his house. After a few months, when the royal government was re-established, he was made minister of finance. The country was inundated with paper money, the credit of the government destroyed, and large sums wanted to meet the public exigencies. Zurlo re-established the finances, and refused the rewards offered him for his services, saying that he had always found himself honoured by his poverty. In 1803, his ministry came to an end. He refused every offer of the new government, until, in 1809, Joseph made him minister of justice. He did much within the few months that he remained in this office; but the government, wishing to give him a more extended sphere of action, made him minister of the interior. This department required an entire reorganization. Zurlo took the best measures for the promotion of agriculture, manufactures, public instruction, the fine arts, finances, &c. He also put the hospital for the insane, at Aversa, on an excellent footing. On the restoration of the old government, he accompanied the queen (madame Murat) to Trieste, where he separated from her; fell sick in Venice, and, during his recovery, made a translation of Anacreon, which appeared there anonymously. He then lived for three years in Rome, and, in 1818, received permission to return to Naples, where he was made minister of the interior in 1820, but, in consequence of the attacks of fanatics, lost the office within a few months. After that time, he lived as a private man, in Naples, where he died in 1828.

ZURZACH; a small town in the canton of Aargau, in Switzerland with 800 inhabitants; thirty-three miles east of Basle. Here is a church dedicated to St Veronica, who is said to have wrought many miracles in Zurzach, and to have been buried there; whence it became a place of pilgrimage much resorted to by devout Catholics. (See *Veronica*.) It still has two fairs which originated from the former pilgrimages, and are much frequented by German, Italian, and French traders.

ZUYDERSEE. See *Zuidersee*.

ZWEIBRUCKEN. See *Deux-Ponts*.

ZWINGLI, OR (as it is often Latinized) **ZUINGLIUS, ULRICH**, the Swiss reformer, was a contemporary of Luther, and was born at Wildenhausen, in the Swiss county of Toggenburg, Jan. 1, 1484. Ulrich was the third of eight sons of the bailiff of that place. He studied at an early age in Basle and Berne, and continued his studies at Vienna, where he occupied himself with philosophy, and again in Basle, where he devoted his attention to theology, under the direction of Wyttenbach. In 1506, Zwingli became parish priest at Glarus, and here employed his time, as Luther had done in the Augustine monastery at Erfurt, in the diligent reading of the Holy Scriptures. He copied the letters of Paul in the original Greek, and even learned them by heart—an acquisition which afterwards proved of great service to him in his public discussions. He accompanied the forces of Glarus during the campaigns of 1512, 1513 and 1515, in Lombardy, in the cause of the pope against the French, in the capacity of chaplain, and was rewarded for this service by the grant of a pension from the pope. In 1516, he became preacher in the convent of Einsiedeln, then a celebrated place of pilgrimage. Here he showed a spirit far in advance of the age, raising his voice not only against the corruptions and abuses that had crept into the church, and infected the public morals, but even against the pilgrimages in honour of Our Lady of Einsiedeln, and calling upon the bishops of Sion and Constance to promote a reformation of religious doctrines, in conformity with the dictates of the divine word. At this time, however, his conduct was so far from exciting suspicion, that, in 1518, the papal legate, Pulci, gave him the diploma of acolyte chaplain to the holy see. He was not long after, invited to Zürich, and entered on his office of preacher in the cathedral, Jan. 1, 1519, with a discourse in which he declared himself for the use of the Scriptures in their genuine form, without regard to the prescribed texts and lessons. At Zürich, Zwingli delivered a series of sermons on the Holy Scriptures; and these discourses, with those against error, superstition and vice, laid the foundation for his future work of reformation. The occasion which called him forth was similar to that which had aroused Luther. In 1518, Bernardin Samson, a Francisc monk of Milan, appeared in Switzerland, with th intention of raising money by the sale of indul gences. Zwingli, who was then preaching Einsiedeln, opposed him there, and afterwards in Zürich, with all the power of his eloquen and brought the indulgences into so much odi that Samson was not even permitted to enter rich; and the bishop of Constance, to whom vile arts of the monk were offensive, support Zwingli in this measure. From this time, Zwi gradually went further in his plans, with the ap bation not only of the Zurichers, but of the g body of the Swiss in general. In Zürich, his forms were so far promoted by the govern that, in 1520, a decree was issued, ordering the Holy Scriptures should be taught without human additions. In 1522, the reformation was extended to external ceremonies. In that year, Zwingli wrote his first work against the fasts of the church, and began the study of Hebrew. The offers of promotion which he received from pope Adrian VI. had not power to make him waver. In 1523, the government of Zürich invited all theologians to a public conference in Zürich, to convict, if possible, Zwingli of an error in doctrine. About six hundred persons, clergy and laymen, were present at this disputation. Zwingli exhibited his opinions in the form of sixty-seven propositions, which were to form the subject of discussion; but the objections of the celebrated John Faber, afterwards bishop of Vienna, appeared so unsatisfactory to the magistracy of Zürich, that they adhered still more zealously to the preachings of Zwingli. The second dispute, in which Zwingli urged his objections to images and the mass with such force that the former were soon after removed from the churches, and the latter abolished, was held, in the same year, in the presence of nine hundred persons. In 1524, Zwingli married Anna Reinhard, a widow, and, the next year, published his Commentary on true and false Religion. The reformation in his native land was now fixed upon a firm base; and he continued the work with undiminished zeal, warmly supported by the public authority, which suppressed the mendicant orders, required all questions of marriage to be settled by the civil tribunals, and established a better administration of the church revenues. In general, Zwingli agreed in his opinions with the German reformers: like them he assumed the Bible as the only rule of faith, rejected all human additions, attacked the ambition and rapacity of the clergy, as well as the superstitions they had countenanced, and aimed to restore the church to the simplicity of primitive times. His views were on some points peculiar, particularly in regard to the real presence, and on some less important matters relative to the liturgy. In order to remove this wall of partition from between the two parties which adopted the new doctrines, a meeting between the Saxon and Swiss reformers was held at Marburg (Oct. 1—3, 1529), at the suggestion of Philip the Magnanimous, landgrave of Hesse. The former were represented by Luther and Melanchthon, the latter by Zwingli and Œcolampadius. The conference was conducted with moderation, and the otherwise violent Luther treated Zwingli with a brotherly kindness. Although a complete union was not effected, yet a convention was agreed upon, the thirteen first articles of which, containing the most important matters of religious faith, were recognised by both parties; and the fourteenth declared that, though they could not agree as to the real presence of Christ in the Eucharist, they would conduct towards each in the spirit of Christian charity. In 1531, an open war broke out between Zürich on the one side, and the Catholic cantons of Lucerne, Schweitz, Uri, Underwalden and Zug on the other; and Zwingli was commanded to take the field, bearing the banner of the canton, which it had been usual for an ecclesiastic to support. A battle ensued on the 5th October, and Zwingli called upon his countrymen "to trust in God." But the enemy were more than twice as strong as the Zurichers, and under better officers: the latter were therefore defeated, and Zwingli was among the slain. The reformed church afterwards received from the hands of Calvin its present organization. —See Hess, *Vie de Zwingli* (Paris, 1810), and Rotermund, *Life of Zwingli* (in German, Bremen, 1818).—An edition of his works appeared at Zürich in 1819 seq., 4 vols.; and a more complete one has been published at the same place more recently (1828 seq.).

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[Those articles in the Supplement which have an Italic *a* within parentheses after the catchword, are *additional* to articles in the body of the Encyclopedia under the corresponding titles. Where the articles have no such distinction, they are to be considered as in themselves new and entire.]

ABANO; a village in the neighbourhood of Padua, celebrated of late years for its mud-baths, and long ago as the birth-place of the celebrated physician Abano, who takes his name from this the place of his birth. The mud-baths are taken out of the hot basins in which they are found, and are nothing more than warm mud richly impregnated with sulphur and certain other salts, especially lime, common salt, and soda. This mud is applied either generally or partially, as the case of the patient may demand. So valuable is the mud considered, that it is kept after having been used, and at the conclusion of the season, returned to the hot fountains, where it is left till the ensuing spring, that it may be impregnated anew with the mineral virtues which they contain. The muds on being taken out are intensely hot, and must be kneaded or stirred some time before they can be borne. When applied, the operation very much resembles taking a stucco cast. They retain their heat, without much sensible diminution, for three quarters of an hour, producing the appearance of a slight rubifacient having been applied to the part, and producing a profuse perspiration from the whole body, a disposition which continues more particularly in the part to which they have been applied, when unchecked by cold. Hence heat is considered as so essentially seconding their operations, that this watering place, or rather mudding place, is nearly deserted by the end of August. The baths, though sometimes considered a remedy in themselves, are most generally held to be mere auxiliaries to the muds, and usually serve only as a prologue and interlude to the dirty performance, they being supposed to open the pores, and dispose the skin to greater susceptibility. The warm sulphureous water and mud baths cannot fail of being powerful remedies in obstinate rheumatic, hepatic, and cutaneous affections of a chronic character; and those who labour under these affections, and can find no relief at home by warm sulphureous baths, and the internal use of the Harrowgate, Moffat, or the Donegal sulphureous waters, may perchance find relief from the mud-baths of Abano. These springs and muds do not appear to have been known to Peter de Abano.

ABANO, PETER DE, a celebrated physician, was born at Abano, near Padua, in the year 1250. After studying Greek at Constantinople, he repaired to Paris, where he took his degree of medicine and philosophy. Before returning to his native land, he visited England and Scotland. In 1302, he was appointed professor of medicine at Padua, but he soon relinquished it, and went to practise physic at Bologna, where his reputation rose very high. The philosophical studies and the liberal sentiments of Abano, however, drew upon him the notice of the inquisition. In 1306, he was denounced before the inquisitorial tribunal, as guilty of necromancy and divination. He was, however, by the powerful intercession of his friends, freed from these charges, but not long after, he was again dragged before the inquisition, and accused of the more popular crimes of heresy and atheism. The health and spirits of Abano sunk under this persecution, and death rescued him from the grasp of his enemies, in 1315. As the only display remaining of their impotent fury, the inquisition burned his effigy in the market place at Padua. The principal work of Abano is entitled, *Conciliator differentiarum philosophorum et precipue Medicorum*, which was first published at Venice in 1471, and though it has passed through many editions, is now scarce. He wrote a variety of other works, particularly three on Astrology, which science was a favourite study of Abano's.

ABBOTT, CHARLES, Lord Tenterden, an eminent lord chief justice of the court of queen's bench, was born at Canterbury on the 7th Oct. 1762. His education commenced at the free grammar school of that city, and he was afterwards sent to Oxford, where he soon obtained both a fellowship and tutorship. The tutorship was in the family of Mr Justice Buller, by whom he was advised to apply to the study of the law, with an encouraging prediction that he would rise high in that profession. He accordingly entered at the Inner Temple, where he applied himself with the utmost assiduity to the acquirement of legal knowledge. On being called to the bar in 1796, he joined the Oxford circuit, and soon became extensively employed as a counsel, his income averaging, before he was raised to the bench, about £10,000 a year. In 1816, through the influence of lord Ellenborough, he was appointed a puisne judge in the court of common pleas, and, next year, was raised to the court of king's bench, on which occasion he received the honour of knighthood. In November, 1818, by the retirement of Lord Ellenborough, he became lord chief justice. The nomination was fully justified by the acute judgment and deep legal learning which he displayed in his high office. Few judges have decided so much and so well, and his rulings have been rarely reversed. In 1827, he was created baron Tenterden, of Hendon, in the county of Middlesex. His last appearance on the bench was on the 26th of October, 1832, being the second day of the trial of the magistrates of Bristol. After he returned home on that day, he was unable again to leave it, being seized with an illness, which carried him off on the 4th November, 1832. Lord Tenterden married in 1795, a daughter of John Lagier Lamotte, Esq., by whom he left two sons and two daughters. As a legislator, his lordship introduced into the house of lords several useful and important bills, which have become the law of the land. In 1802, his lordship (then Mr Abbott) published "A Treatise on the Law relative to Merchant Ships and Seamen," which is the standard work on the subject, and has gone through several editions.

ABERCROMBY, Sir Ralph, (*a*.) Sir Ralph was born in 1734, not 1738, as stated in the Encyclopedia. His son James, late one of the members of parliament for the city of Edinburgh, and speaker of the house of commons, was elevated to the peerage in 1839, under the title of Lord Dunfermline. One of his grandsons is member for Stirlingshire.

ABERDEEN, (*a*). At the commencement of the Encyclopedia, less space was allowed for local topography than was afterwards found could be afforded. Aberdeen, accordingly, standing early on the list, was treated in a merely summary manner. We are glad at the opportunity the Supplement gives of entering more into details regarding this ancient and important seat of learning and commerce.

Aberdeen is the third city in size and population in Scotland. Under this name we include New Aberdeen and Old Aberdeen; the latter a city in the strict sense of the term, from its having been the seat of a bishop, and the former, though only a royal burgh, being generally described as a city, owing to its population and opulence. They are bounded by the river Dee on the south, and by the Don on the north; New Aberdeen lying on the north side of the Dee, and Old Aberdeen on the south side of the Don. The lat. of Aberdeen is 57° 8′ 57″. 8 N.; and the lon. 2° 5′ 40″. 7 W.; the distance from Edinburgh by the nearest route, through Fife and Dundee, is about 109 miles. The town is entered from the south by a bridge of seven arches built across the Dee. This bridge, the building of which was commenced by bishop Elphinstone, was finished by bishop Dunbar in 1527. It is reckoned one of the finest bridges in the kingdom; and a proposal is just now before the town council, to lay out a sum between five and six thousand pounds in widening it after a plan which will preserve the old elevation, and all the tablets and shields on the buttresses. The population of Aberdeen, including the whole parish of St Nicholas, by the census of 1831, was 32,912; while that of Old Aberdeen, including the parish of Old Machar, was 25,107, showing an increase of more than 13,000 on the whole population since the census of 1821. There can be little doubt that the next census will show an equally great increase on the population of 1831

Commerce, Manufactures, &c.—The commerce and manufactures of Aberdeen are extensive and thriving. It is calculated that about ten thousand individuals are employed in the manufactories in and around the city. The principal articles of manufacture are cotton, linen, worsted, carpetings, canvas, thread and paper. Several large iron foundries have been established here, and shipbuilding is carried on to a great extent. The salmon-fishing is prosecuted in the bay, and in the rivers Dee and Don. In the year 1836, the herring-fishery, which promises to be a source of wealth to the city, was commenced at Aberdeen. In order to encourage the trade, bounties were given by the magistrates, and the harbour trustees exempted the boats from the payment of shore-dues. The fishing is now considered to be established. The principal importations of Aberdeen are wheat and flour, timber, flax, cotton, lime and coals; while the chief exports are oats, manufactured cotton, wool and flax, granite-stone from the neighbouring quarries, cattle, fresh salmon and white fish. Part of the present tide harbour of Aberdeen is about to be converted into a wet dock, according to a plan laid down by Mr James Walker, civil engineer, the execution of which, it is calculated, will cost £85,800. The dock will be capable of containing 240 vessels of 300 tons burthen. The scheme has met with the general approbation of the shipowners, merchants and manufacturers of Aberdeen. From the harbour there is a canal, completed in 1807, which runs north-west to Inverury, a distance of more than eighteen miles. On the Girdleness, a little to the south of the entrance to the harbour, is a lighthouse, which was first lighted up in 1833. The shipping of Aberdeen has increased of late years. The number of vessels now belonging to the port is 185, of which ten are steamers; the tonnage of these vessels is 31,063; the tonnage of the steamers being 4479 tons. Three of these steamers sail between Aberdeen and London; one of them sails between Aberdeen and Hull; while there are five on the passage between Aberdeen and Leith. Regular conveyance by steamers is also kept up between Aberdeen and Cromarty and Inverness, and Caithness, Orkney and Shetland. Besides the trading vessels which we have enumerated, there are two tug steamers employed in drawing vessels into the harbour. Amongst other contemplated improvements in the city, it may be mentioned that a joint stock company has been set on foot for the purpose of opening up a new and improved access from the harbour to the centre of the town. Along with this scheme, the company contemplate the erection of a great central public market on the west side of the New Street.

Municipal Government, &c.—The municipal affairs of Aberdeen are under the management of a Provost, four Bailies, a dean of guild, a treasurer and twelve councillors. The municipal incorporation of Old Aberdeen consists of the same number of members, but has no dean of guild. In both cities there are seven incorporated trades. The harbour works are managed by a board of trustees.

consisting of the town council, five trustees elected by the burgesses, and one by the incorporated trades. The watching, cleaning and lighting of the town, are under the control of a board of commissioners of which the Provost, the dean of guild, the city treasurer and the convener of the incorporated trades are *ex-officio* members, and other eighteen commissioners are elected by the rate payers. Aberdeen is better supplied with excellent water than any large city in Scotland. The act of parliament for raising the assessment for supplying the town with water from the Dee was passed in 1829, and has conferred immense benefit on the population.

Charitable Institutions.—Among the benevolent and charitable institutions of Aberdeen may be mentioned in the first place, Robert Gordon's hospital in which a hundred and thirty-eight boys are at present maintained and educated, their instruction embracing, besides the more ordinary branches, French, drawing and music. The building itself is one of the most ornamental in Aberdeen. Another hospital, on a less extensive scale, educates fifty boys; and the girls' hospital now contains forty inmates. A new hospital for girls has also just been erected and endowed at the west side of the town by a benevolent lady. A house of refuge was established here in 1836. The new lunatic asylum was built in 1819, in a beautiful and retired situation at a little distance from the town. The new infirmary is just completed and is a very fine structure. In connexion with it there is a general dispensary for furnishing medicines to the poor gratis; and there is another similar institution in a populous district of the town, and two others in the parish of Old Machar. The benevolent institutions and associations in Aberdeen are indeed so numerous that we have not space even to notice their names. Besides those which we have already mentioned, there is an institution for the education of the deaf and dumb, and there is soon to be an hospital for the relief of the blind, to be built and endowed from funds bequeathed several years ago, by a Miss Cruickshank. A public soup kitchen has for many years been opened for the benefit of the poor in seasons of distress, and a building to be permanently used for this purpose has just been completed. There are besides a clothing society, a society for educating the children of the poor, and a number of other lesser charitable associations, all managed with the greatest economy and prudence. Measures are now in progress for establishing an hospital for orphans, from funds left for this purpose by Mr Shaw, a merchant in Aberdeen. Old Aberdeen has an hospital for five decayed maiden daughters, and five widows of burgesses. One of these women is appointed governess, the founder of the hospital in his deed of endowment, which is a very curious document, most ungallantly observing that "it is impossible to keep order and regularity among ten women, except one of them have a superiority over the rest." The old town possesses another very ancient institution—the bead house, as it is called—founded in 1531 by bishop Gavin Dunbar, an amiable prelate, distinguished for his munificence and good works. In this hospital, the benevolent founder intended that twelve old men should be maintained, in order that they might say their prayers without molestation. At present twenty-one old men receive annuities of six or seven pounds each from the endowment.

Churches.—There are in Aberdeen, including the parishes of St Nicholas and Old Machar thirteen parish churches. Two other churches in connexion with the establishment have recently been erected, and there is besides a chapel for seamen in a convenient situation near the quay, in which service is performed by clergymen of the establishment. The parish church of Old Machar is the nave of the ancient cathedral, and is a magnificent old building. The East and South churches are new buildings, erected on the site of former churches, and are both fine gothic structures. The North church is a capacious building, of a recent date, and of a Grecian kind of architecture. Grey-friars church is the only place of worship now standing in Aberdeen, which once belonged to the Roman Catholics. Besides the churches of the establishment, there are three chapels belonging to the United Associate Synod, one in connexion with the original Seceders, and another with the original Burghers. There are two Scottish Episcopalian chapels, and one Independent chapel, in which the worship is conducted after the forms of the church of England. The Roman Catholics have an elegant chapel here, erected by the present clergyman, Mr Gordon, about the year 1804. There are four congregations of Independents; two Baptist congregations, a Wesleyan Methodist chapel, and one congregation of the Relief church. We have only to add that the society of Friends have a meeting-house here; and that there are besides a congregation of Unitarians, another of Glassites, and another of Irvingites.

Colleges, Schools, &c.—Of seminaries of education, Aberdeen has a very fair proportion. It is well known that it is the seat of two universities, an honour of which no other city in Europe can boast. King's college and university in Old Aberdeen, was founded in the year 1500. It is much frequented by students from the northern counties, who are attracted to it by the numerous endowments, called bursaries, which it possesses. Its library is extensive and valuable. Marischal college in New Aberdeen was founded in 1593 by George Earl Marischal. The original buildings are heavy and inelegant; but a splendid new college, after a design by a native architect of eminence, is now erecting in their place. The foundation stone of the new buildings was laid on the 18th of October, 1837, by his Grace the Duke of Richmond. The funds for this erection are a grant from government of £15,000 with accumulated interest of two or three thousand pounds more, and subscriptions which now amount to £7,500, of which the town council gave a subscription of £1000. The senatus of Marischal college consists of a chancellor (the Duke of Richmond) a rector (Lord Brougham) a dean of faculty (Mr Bannerman, M.P.) a principal, and nine professors. The sessions, both at King's college and Marischal college, commence in the beginning of November, and close at the end of March. The grammar school of Aberdeen contains five classes, the two highest of which are taught by the rector. Formerly Latin was the only study in this seminary, but the present rector, Dr Melvin, in the year 1826 commenced giving instruction in the elements of Greek, and in the year 1835, the masters, on the recommendation of the town council, the patrons of the school, introduced history, geography and arithmetic into the curriculum. All the classes at this school are well attended. There are also, under the charge of the magistrates, two English schools, a writing school and a mathematical school, besides a large seminary for educating four hundred boys and girls, erected from funds bequeathed by Dr Bell of Madras. In Old Aberdeen there is also a school on Dr Bell's system, under the patronage of the council there. Besides these, there are several schools in connexion with the parish churches and a number of seminaries conducted by private teachers. The incorporated trades have a school for the children of their freemen. The Roman Catholics have a large and elegant school, the building of which was finished in 1833. As several of the schools under the patronage of the magistrates are not considered to be sufficiently commodious and elegant, an attempt was made, in the year 1836, by the town council, to procure an act of parliament for appropriating the existing surplus of a fund which had been left by a Sir Alexander Hay in the year 1605 for the maintenance of the ancient bridge of Don, (a structure erected in the thirteenth or fourteenth century) and applying it to the building of new and enlarged schools in Aberdeen. This scheme was strongly opposed by those who thought that in no case can mortified funds be diverted from the original purpose of the donor; and the bill, notwithstanding the greatest exertions in its favour on the part of provost James Blaikie, then chief magistrate, and Mr Bannerman, the representative for the city, was eventually lost, having been twice thrown out in a committee of the House of Commons. It may be stated here that the fund left by Sir Alexander Hay, had, by profitable investment and prudent management on the part of the magistrates, increased so much beyond what was required for fulfilling the intention of the donor—the upholding of the ancient bridge—that from the surplus, a new and elegant granite bridge, with five arches, was erected over the Don to the east of the old bridge in the year 1829.

Literary Societies.—Though the inhabitants of Aberdeen do not yield to those of any other town in Britain in learning, there are not many literary or scientific associations here. A mechanics' institution has been established since the year 1824. It has a library consisting chiefly of scientific works, and lectures on science and literature are delivered to the members during the winter half of the year. The artists' society, of which the Earl of Aberdeen is patron, was established in 1827. We do not know we are justified in reckoning as a scientific institution, a phrenological society, which has existed since the year 1836, and is possessed of a library and a collection of casts; but of its proceedings little is known to the uninitiated, owing to the peculiarly unobtrusive manner in which it pursues its labours. We may here add that there are three weekly newspapers in Aberdeen, the *Journal*, the *Herald*, and the *Constitutional*, all of which are conducted with considerable ability. The Journal, which was commenced in 1748, is the oldest newspaper north of the Forth, and has a very large circulation. Its principles are moderately conservative. The Herald is a whig paper, and the Constitutional is conservative, and especially devoted to the defence of the church.

Public Buildings.—Amongst the principal public buildings in Aberdeen, besides those to which we have alluded in speaking of the institutions and churches, are—the county rooms in Union Street, founded in 1820; the surgeons' hall in King Street, and the advocates' hall, which is just completed, in Union Street. The barracks are erected on the Castle Hill, a fine airy situation on the east side of the town. There is a military hospital on the Heading Hill, the ancient place of execution, which is separated from the Castle Hill by a street running in the hollow, and over which an elegant cast iron bridge is about to be erected. The tolbooth in Castle Street is an ancient building the front of which was rebuilt of granite in the year 1820. It has on one side the town house, the appearance of which is disfigured by the shops which occupy the ground floor, and on the other the new inn, which it is proposed to take down, for the purpose of erecting a splendid building for the North of Scotland bank and the North of Scotland insurance office. The cross in Castle Street is a curious old building of a hexagonal form. It was erected in place of a more ancient cross in the year 1686, but has since been altered for the worse, and it is just now profaned by being used as a coach office. Around the upper part are busts in alto relievo of the royal family of Stuart. The court house, at the back of the tolbooth, was finished in 1820, and the new jail which adjoins it, in 1831. The bridewell is a very large building, situated on the west side of the town, near the entrance by Union Street. In the line of Union Street, a splendid granite bridge of a single arch of 130 feet span, is thrown over a large hollow, through which the Denburn—and not the river Dee, as some English writers ignorantly suppose—runs into the harbour. The athenæum or public reading-room is situated at the east end of Castle Street. The theatre in Marischal Street, which was finished and opened in 1795, is a neat building, though not so large as might be expected considering the size of the city. The Aberdeen bank is a handsome building at the head of Marischal Street. Aberdeen, besides branch banks, possesses three native banks, the oldest of which is the Aberdeen bank, established in 1767. There are two native insurance companies, both of which are understood to be in a flourishing condition. The principal inns in Aberdeen, are the Royal hotel, the Union hotel, and the Aberdeen hotel, all in Union Street, and the new inn in Castle Street. There are just now seventeen coaches which start daily from Aberdeen to Edinburgh, Inverness and other stations.

Having briefly noticed the statistics of Aberdeen, we may add, that its antiquity is not disputed by those who are not satisfied that its identity with the Devanba of the Romans has been made out. The students from the Highlands who flock to King's college, are unanimously agreed that the word Aberdeen is Gaelic, which is the derivation that might be expected from them; but from some very ancient forms in which the word has appeared, there is reason to doubt the correctness of this Celtic etymology. With regard to the charter said to have been granted to Aberdeen by king Gregory, antiquaries are much disposed to disbelieve that either it, or the monarch who gets the credit as bestowing it, ever existed. The first authentic notices of Aberdeen begin about the year 1154, when king David I. removed the see of the bishop of Mortlach to this city. About the year 1178 or 1179, Aberdeen received a charter—in all probability its first—from king William the lion, who had a particular favour for this city. Subsequent charters from the Scottish monarchs confirmed and extended its privileges; in 1365, it was ranked as the second city in Scotland in the parliamentary roll; it was frequently visited by the kings of Scotland, and has at all times been distinguished for its loyalty. It is now one of the most flourishing cities in Great Britain.

ABERGAVENNY; a town in Monmouthshire, Wales, seated on the confluence of the rivers Usk and Gaveny, 142 miles west from London, and 14 south-west from Monmouth. The Derry, one of the hills which sustain the pyramidal hill called the Sugar Loaf, rises above the town, which is built in an irregular manner, but is pleasantly interspersed with trees. On an eminence near the south end are the ruins of the castle, which was founded soon after the Conquest, by Hameline de Balun, or Baladon, one of whose descendants founded here a priory for Benedictine monks, of which some vestiges also exist. The church, dedicated to St Mary, recently rebuilt, is a spacious structure in the Norman style of architecture, and contains several very ancient monuments. Its choir remains in its original state, with rudely carved oaken stalls. The Baptists, Independents, Wesleyan Methodists, and Roman Catholics, have each chapels here.

The principal trade of this place is in wool. In the vicinity are numerous iron works. Abergavenny is the thoroughfare from the west of Wales to Bath, Bristol, and Gloucestershire; and the Monmouthshire and Brecon canal, which passes within a mile of the town, adds greatly to its facilities for trade. Abergavenny castle confers the title of earl on the family of Neville. Within half a mile of the town are the remains of a Roman camp; and at Lloyndhu is a mineral spring, said to be of service in scorbutic complaints. Population of the town in 1831, 4230.

ABINGDON; a market-town in Berkshire, England, situated at the influx of the Ock into the Thames, 55½ miles W. N. W. from London. It consists of several well-built streets, which terminate in a spacious area, in which the market is held; and in the centre of this area is the market-house, a handsome structure of curious workmanship, with a large hall above, in which the summer assizes are held, and other public business done. The most considerable manufactures of the town are canvass, sacking, and sail-cloth. The principal trade is that of malting. Market-days, Monday for corn, and Friday for articles of general consumption. There are two parish churches, and several chapels for dissenters; also several hospitals and alms-houses, and a free grammar-school, founded in 1563, by John Royse, for the education of 63 boys. Before the reform-bill Abingdon returned one member to parliament, and it still retains that privilege. Population in 1801, 4356; in 1831, 5259.

ABSENTEEISM. The effect of the non-residence of landholders upon their estates, or, as it is comprehensively styled in one word, *absenteeism*, is a question upon which there has been some difference of opinion among economists. Mr M'Culloch, on his examination before a committee of the House of Commons, declared that it is of no consequence to the inhabitants of a particular country, as, for instance, Ireland, whether the landholders spend their incomes at home or abroad. When asked whether "the population of a country would not be benefited by the expenditure at home of a certain portion of the rent, which if the landholder were an absentee, would be expended abroad," he replied; "No, I do not see how it would be benefited in the least. If you have a certain value laid out against Irish commodities in the one case, you will have a certain value laid out against them in the other. The cattle raised by the landholder are either exported to England or they stay at home. If they are exported, the landlord will obtain an equivalent for them in English commodities; if they are not, he will obtain an equivalent for them in Irish commodities; so that in both cases the landlord lives on the cattle, or on the value of the cattle, and whether he lives in Ireland or in England, there is obviously just the very same amount of commodities for the people of Ireland to subsist upon."

The fallacy of this argument is so apparent, that it has been almost universally rejected in England. It is, indeed, too plain to admit of question, that if the products imported from Ireland in payment of the rent of absentee landholders reward the labour of a hundred thousand English workmen, they would,—had they been consumed at home,—have afforded employment to a hundred thousand Irishmen, who could not otherwise have obtained it, and have conferred an economical benefit equal to the profits of their labour, upon Ireland. The non-residence of the Irish proprietors compels the Irish labourers to emigrate in swarms to England, to find the employment which they cannot obtain at home.

Mr Senior rejects the doctrine of M'Culloch, as stated by himself, but admits it with a qualification. When the non-resident proprietor receives his income in agricultural produce, his absence is a disadvantage, but when he receives it in manufactures the case is otherwise. If an English landholder resides in France, and his rents are remitted to him in British manufactures, his income, says Mr Senior, though finally spent abroad, is nevertheless first spent at home, and the only effect of his non-residence is that he gives employment to one description of workmen instead of another. It is obvious, however, that this distinction is wholly futile, and that it makes no difference whatever to the community, in what form the income of an absent proprietor is remitted to him. If it be more advantageous to him to receive it in manufactured articles than in agricultural produce or specie, it must be because there is a profitable trade carried on in such articles between the country where he resides and that in which his estates are situated. This trade employs of course a certain amount of capital, and the investment in it of an additional amount for the purpose of making remittances, would only displace an equal amount that had been invested before. The effect would be, not as Mr Senior supposes, to employ one set of workmen instead of another, but to throw out of employment one set of workmen instead of another; and the general result,—as far as the community is affected,—would be in both cases precisely the same.

ABSORPTION. All bodies, fluid and solid, possess the property of absorbing gases and vapours into their pores, without changing their state of aggregation, and without forming with them true chemical compounds. In the case of solids, the extent of the absorption and the rapidity with which it takes place, are modified by the dryness and porosity of the substance, by the atmospheric pressure and temperature, as well as by the nature of the gas or vapour. The more dense a piece of charcoal is, or the smaller its pores, the greater are its absorbent powers; this is true at least to a certain extent. A piece of box-wood charcoal has been found, by experiment, to absorb within its pores,

Ammoniacal gas . .	90	times its volume.
Muriatic acid gas . . .	85	..
Sulphurous acid gas . .	65	..
Carbonic acid gas . . .	35	..
Oxygen gas . .	9¼	..
Nitrogen gas . .	7	..
Hydrogen gas . . .	1¾	..

It is to be remarked that the gases which are absorbed by charcoal in greatest abundance, are those most easily reduced to the liquid state by cold and pressure. For vapours, which differ from gases only in respect of ease of liquefaction, are taken up by charcoal and other porous bodies with the greatest readiness. The power which charcoal has long been known to possess, of absorbing odours, is accounted for by its possessing in an eminent degree the property of condensing in its pores, vapours and gases. It renders sulphur waters, for example, sweet, by absorbing the sulphurated hydrogen gas to which these waters are indebted for their odour.

A circumstance of great importance, as connected with the manufacture of charcoal and gunpowder, is intimately connected with the present subject. Charcoal permitted to lie together in quantity, is observed to become hot, and if left to itself, to take fire. Many serious fires and accidents have arisen from this cause. The most probable explanation is, that the charcoal condenses within its pores, atmospheric air, by which process much heat is developed, which accumulates, by virtue of the non-conducting powers of charcoal for heat, to such an extent as to set the mass on fire. Platinum sponge, or platinum in a finely divided state, possesses extraordinary powers of absorbing gases, particularly oxygen. If the platinum sponge has been purified by long boiling with water, and dried in vacuo over sulphuric acid, and then brought into the air, it absorbs the oxygen of the air with so great rapidity, and so much heat is evolved, as to make the mass red-hot. Spongy platinum well prepared can absorb 700 times its volume of oxygen. Liquids likewise absorb gases in a manner analogous to the above cases of absorption by solids. The volume of water at 64° Fahr. dissolves

Carbonic acid gas . . .	1·06 times its volume.
Oxygen gas	0·065 ..
Nitrogen gas	0·042 ..
Atmospheric air	0·050 ..

In the atmospheric air dissolved by water, the relative proportions of its ingredients are different from the proportions in atmospheric air itself; there is more of oxygen.

The phenomena of the absorption of gases and vapours are generally referred for explanation to a power in bodies analogous to capillary attraction, and the gases are supposed to be condensed on the surfaces lining the pores. The idea of a chemical affinity acting in these cases cannot be admitted; the gas is not intimately united with the minutest particles of the body in a chemical manner, but has merely attached itself mechanically, in a way it must be confessed as yet peculiar to these cases, to the extensive surface afforded by the state of porosity. The density of the gas in this state must be very great; in the case of oxygen gas, condensed by platinum sponge, for instance, the oxygen must exist therein in a state approaching, if not amounting to, the solid state.

ACIDIMETRY means the testing of acids with reference to their strength and purity. This is a process of great importance in the chemical arts, and is especially applied to the three mineral acids, sulphuric, muriatic and nitric. The specific gravity of these acids is greater than that of water, and the rate of increase of specific gravity is in their case a precise indication of a corresponding increase in the content in real acid, and tables have been constructed which give at once the content in real acid at different specific gravities. The instrument in use by the manufacturers, is a glass hydrometer. The sulphuric acid, or oil of vitriol of commerce, should have a specific gravity of 1·85, or mark 170 on Twaddel's hydrometer (See *Hydrometer* supplement.) The greatest specific gravity of the muriatic acid, or spirit of salt of commerce, is 1·20, or 40 on Twaddel's instrument; it is more generally sold at 36 on Twaddel, or 1·[illegible] specific gravity. Nitric acid or aqua fortis can be had of specific gravity 1·54, or 108 on Twaddel, but single aqua fortis in commerce stands only 70 on Twaddel. Another and more correct mode of estimating the real content in acid of the commercial articles, is by means of alkalies of known strength, or by means of calcareous spar in the case of the muriatic and nitric acids. The larger the quantity of alkali any acid can neutralise, the greater is the amount of real acid; and the greater the amount of calcareous spar, or carbonate of lime, dissolved, the stronger the acid subjected to the test. The alkali used is ammonia or carbonate of soda, and the means of ascertaining the precise limit of neutrality is litmus or turmeric paper. The specific gravity of acetic acid does not afford a sure criterion of its strength, and recourse must be had to the more rigid chemical tests.

The sulphuric acid of commerce generally contains a minute quantity of nitrous acid, a substance which is exceedingly hurtful in many operations in dyeing, but most particularly in the dissolving of indigo. The presence of the nitrous acid in sulphuric acid is tested by pouring upon the latter in a tube a solution of copperas or sulphate of iron. The impurity is detected by the two striking together a deep red colour after the lapse of a second or two. The muriatic acid of commerce is tested for its content in sulphuric acid, by a solution of muriate of barytes; a white precipitate is the indication of the impurity. Muriatic acid may further contain sulphurous acid; which is detected by adding to the suspected acid some protochloride of tin, generally called crystals of tin, and then diluting with water; there is a brown residuum if the acid tested contained sulphurous acid. The nitric acid of commerce is tested for sulphuric acid in the same way as muriatic acid; and for muriatic acid by a solution of nitrate of silver.

ACUPUNCTURE, (*a*) is a medico chirurgical operation which was introduced into Europe more than a century ago, and has for time immemorial been practised in China and Japan. It consists in introducing one or more needles of a particular size and shape, into any diseased part, especially where there is swelling and pain. It has been employed in chronic rheumatisms, and muscular and neuralgic rheumatism, unaccompanied by heat, in sciatica, lumbago, nervous and convulsive affections, sprains, contusions, uterine pains, hiccup, and hysterics. In all cases where a watery fluid is lodged under the cutis, or among the cellular substance, or the fascia of the outer layer of muscles, acupuncture may be employed with advantage.

There is a species of acupuncture in which the operation is associated with galvanism and electricity, under the name of the electro, or galvano-puncture, which has in some cases been attended with good effects.

It is about seventeen years since this practice was revived; but notwithstanding its acknowledged good effects in numerous cases, it is now again on the wane, and quickly sinking into that obscurity in which for more than a century it formerly posed. Acupuncture has been employed to a considerable extent, and with a good share of success, in the Meath Hospital, Dublin, under the direction of Drs Graves and Stokes. We shall quote a case of sciatica treated on this plan, by the direction of the former of these physicians.

"One of the most commonly employed agents," says Dr Graves, "in the treatment of chronic sciatica, is acupuncture, and of this it is necessary to say something, as there are many and decided proofs of its efficacy, in giving not only temporary, but also permanent relief. Persons who have received benefit from acupuncture, have been always noticed to labour under the affection in the chronic stage; few, if any, having derived any advantage from it when their symptoms were acute, and when there was severe pain and tenderness along the course of the nerves. You are not, however, to be deterred from employing it in chronic cases by the existence of tenderness along the course of the nerves; and you should impress on your minds that it is in all cases deserving of trial, where the disease has been of considerable duration. A common sewing needle, heated red-hot, and allowed to cool gradually, with a head of sealing wax, will answer the purpose much better than the needles which are sold, and called acupuncture needles." "The reason of heating the needle," says Dr Stokes, "is to take the temper out of the needles, by holding them in a candle, and then letting them cool gradually. The next thing is to place a head, which will remain firm on the needle, and for this purpose you place a small portion of thread through the eye, and then cover it with a bit of melted sealing wax. Having thus formed the head, you sharpen its point and polish it by the emery pincushion, and the sharper it is the better."

"I remember a case of chronic sciatica," observes Dr Graves, "which came under my notice several years ago; the patient was very much reduced; he was quite lame and greatly weakened; he had been through France, and remained at Barege for a considerable time, without any benefit; his sufferings were very great, and broke down his constitution considerably. On his return to this country, he consulted me, and I advised the application of the needles. After the third application the pain was removed, the lameness also rapidly diminished, and in the space of a fortnight he was quite well, and what is very remarkable, continues so ever since." So happy a result as this is, however, seldom met with. Chronic cases of sciatica, in general, give a great deal of trouble, and frequently disappoint the best directed efforts of medical skill.

Respecting the use of the electro or galvanic puncturation in a case of paralysis, "it has lately been proposed," says Dr S. "to employ the stimulus of electricity and galvanism in a different way, by transmitting it directly to the muscles of the affected limbs, by means of needles, which are to be inserted into different parts of paralysed extremities, and which are intended to act as conductors for transmitting the galvanic influence. This has been termed the electro or galvanic puncturation, and forms an excellent mode of applying the stimulus of galvanism. The mode of preparing the needles has been already described, and there is nothing more simple than to introduce them.

"Placing the point of the needle perpendicularly on the part, you press it downwards in a slanting direction, using, at the same time, a rotatory motion, and thus easily pass it in. When you have pierced the skin and fascia there is no difficulty in introducing it into the muscular fibres. The distance between the needles must be regulated according to circumstances. You then proceed to send the galvanic fluid to the part, and for this purpose the best mode is to employ a small galvanic battery, with a limited number of plates. If you have plates of from one to two or three square inches, you will find that from fifteen to twenty of these in a state of ordinary action, will be quite sufficient, particularly in the commencement of the treatment. It is a curious fact that the intensity of the shock is increased to an extraordinary degree, by means of the needles. A battery which, in the usual manner, would not communicate any shock, will, when used with the needles, give a violent one, and communicate such a stimulus to the nerves as will throw the whole limb into violent spasms, and cause a copious perspiration to break out over the body. I have seen (continues Dr Stokes), very good effects from a feeble battery in this way, and it would appear, that this is the result of the direct transmission of the galvanic influence to the muscular fibres. In most cases a perspiration is brought on, the limb convulsed, and sometimes the whole body is thrown into spasms."

Dr Elliston of the London University, who has devoted a considerable share of attention to this branch of therapeutics, prefers the following mode of performing the operation. "The spot being selected, usually the seat of the pain, or when any circumstances forbid this, the adjacent parts, the operator having stretched the skin with the fore and middle fingers of the left hand, pierces it perpendicularly with a gentle pressure, and the body of the needle is advanced by means of a semi-rotatory motion, in opposite directions, till it has penetrated to the required depth, and this is repeated till the desired number is introduced. Their withdrawal is sometimes effected by means of a forceps, but it will be better to withdraw them by the same motion with which they were introduced, as the skin is painfully elevated by their direct and forcible retraction: possibly also, by the latter mode, the point of the needle might be broken off if it were not well tempered. The withdrawal of the needles is not followed by hæmorrhage; but sometimes a single drop of blood oozes from the puncture. In penetrating, the needle often meets with variable degrees of resistance, according to the nature of the parts through which it passes. The Japanese and Chinese allow the needles to remain only while the patient makes thirty respirations. M. Cloquet states, that he derived the most marked benefit in cases where he caused them to be kept in several days, and this accords with our own experience. It is true, the pain may cease instantaneously on the introduction of the first needle, but we observe this by far more frequently after the needles have been in some time: indeed, so satisfied are we on this point, that we prefer a single needle remaining for some time in the part to several introduced and withdrawn speedily. But there is yet no general rule as to the time which the needles ought to be allowed to remain."

Chronic rheumatism is one of those complaints in which acupuncture is perhaps most frequently successful, and it appears that, in proportion t8 the length of time the rheumatic affection has existed, should be the length of time in which the needles remain in the part.

There is another class of cases in which the operation of acupuncture might be employed by any intelligent person, or even by the patient, and these are anasarcous, or watery swelling of the legs, and of the parts of generation in the male, where, from a variety of causes, these tender parts are often distended to an immense size with a clear watery fluid. In either of these cases a few punctures with a common needle often reduce the swelling, and very materially assist the other means employed in the case.

Before concluding this article we again recur to the subject of galvanic puncturation, and its effects in paralysis.

"With respect to our experience of the value of this mode of employing electricity (observes Dr Stokes), I have to remark, that if galvanism or electricity can be of any use to paralysed limbs, this is one of the best modes in which it can be applied. The apparatus is simple, can be prepared in a moment, and does not depend on the state of the weather, like the ordinary electrical machines. There is another advantage also, it is not so likely to excite alarm in the mind of the patient. We have employed it in several rheumatic and paralytic cases in the Meath hospital, but have not as yet been able to say, that decided benefit has accrued from it to the *majority* of the patients on whom it has been tried. This is more particularly true with respect to paralytic patients; in the rheumatic cases we have found it more beneficial. We have had, however, distinct and unequivocal proofs of its value in one case of paralysis of the muscles of the face, which had all the characters of that described as resulting from an affection of the seventh pair of nerves. This patient had been for a long time labouring under an affection of one side of his face, and had used a variety of remedies. Those principally employed were stimulating liniments, and the internal use of strychnine, from which he derived some slight benefit, but the application of the galvanic fluid in the way I have mentioned, was followed by decided and rapid improvement. Indeed from the time it was first applied, the patient recovered rapidly, so that in a very short time all the deformity of face disappeared."

From these facts and circumstances, and many others that might be adduced, we should be sorry to see the very ancient operation of acupuncture entirely thrown aside, because it fails in many cases, and does not cure every disease for which it has been prescribed. The modus operandi of acupuncture, it is difficult, nay, perhaps impossible, satisfactorily to explain, and it will yet require much close observation and attention to those cases in which it is employed to arrive at even anything like an approach to truth on the subject. This is indeed a matter of very little consequence to the patient, so that under its application the disease has been removed, but to the professional man, and indeed to every inquiring mind, it is always matter of deep regret that darkness should envelope the *rationale* of a process by which so much good is effected, and that we should still be shut up to act in so very many cases on empirical principles. "The effects of acupuncture," says Dr Elliotson, "are not deduceable from counter stimulation, for they are sometimes most remarkable when such stimulation has been scarcely felt; not from electrical agency, for they are equally produced when the needles employed are of gold or silver; nor from moral agency, for they who derive the curative influence of the needles, are as much benefitted by their application, provided their cases be suitable, as those who have the most unlimited confidence in their efficacy; the reasoning and incredulous European being, in this respect, on a level with the all-believing and unlettered Chinese. And yet these effects are not only beyond all dispute, but, in many instances, are so prompt, so marked by cessation of pain, as to impress the vulgar mind with the idea of supernatural agency. The differences of opinion respecting the value of acupuncture, are the very opposites of each other, and are entertained by two classes of practitioners—the one indifferent, deeming its importance so problematical, so improbable, that investigation of its merits would be a waste of time—the other enthusiastic, being satisfied, from observation and experience, that many owe their deliverance from pain to the prolonged or frequent application of the needles, who had sought relief in vain from the adoption and long perseverance in the use of other means. For our own part, fully convinced of its importance in therapeutics, we should merely recommend, that greater attention be bestowed in observing the cases in which it is found beneficial, in order to enable us to point out with greater precision those in which it is suitable."

AERATED WATERS, a term popularly applied to a variety of acidulous and alkaline beverages, more or less impregnated with fixed air or carbonic acid gas. Water absorbs under the natural pressure of the atmosphere, about its own bulk or volume of carbonic acid gas. If a pressure be applied equal to two atmospheres, the water will absorb double its own volume, its absorbing power increasing as the pressure. Water thus impregnated acquires a pleasant acid taste, to which is usually added a small quantity of potash or soda, and such flavouring or other ingredients as may be required to imitate the natural mineral waters. The manufacture of these liquids has of late years become of considerable extent, owing to their agreeable as well as medicinal qualities.

AFRICA (*a*). The discovery by Lander of the termination of the Niger in the bay of Benin has opened up a broad and rich territory to commercial enterprise. The resources and the necessities of this extensive district of Africa are equally interesting, and it is presumed that a thriving traffic will speedily be established with it. On Lander's return to England, after the death of his master, Clapperton, the intelligence and enterprise which he had shown recommended him to government as a fit person to complete the discoveries which had been begun by Clapperton and his companions. Lander, accordingly, went out with his brother, and landed in the Bay of Benin (1828). The account of their journey is most interesting: The two brothers, who had been equipped by the government, and furnished with small presents to the native chiefs and princes, were in general well received by all ranks, and were able at last to accomplish the objects for which so many expeditions had been undertaken, and so many travellers had died.

They reached Boussa, a large city on the Niger, and the capital of a considerable kingdom. At this place there occurs a series of interruptions in the bed of the river, which, from some cause not explained, is said to be contracted in one spot to a very small breadth, without increasing either in depth or velocity—a strange phenomenon, if correctly observed. The travellers from Boussa sailed up the stream, for a considerable distance, through a line of navigation broken by shallows and rapids but amid a country everywhere fertile and beautifully cultivated. They then returned to Boussa, and engaged canoes to take them downwards to the sea. In this important part of their voyage they encountered much danger, both from stormy weather and from the violence and treachery of some of the slave-dealing Africans whom they encountered on the lower part of the river. Their voyage was mostly through a rich and populous country; and they at last reached the salt water, and saw the Niger enter the sea by a number of mouths in the Bay of Benin. These had been long known to European seamen, but were by them imagined to be separate rivers, leading to different parts of the country; and it was only Reichard, Macqueen, and a few who had been convinced by their arguments, who conjectured that they united at a short distance inland to form the large stream of the Niger.

In descending the river, the Landers made a second discovery, hardly inferior in importance to that which was the principal object of their voyage. It had been conjectured by Macqueen, Bowditch, and others, on the evidence of native merchants and the Arabian geographers, that at some point on its lower course the Niger was joined from the east by a stream not much less than itself in size, and which would, of course, open up a channel for ships and trade, as far to the eastward in Africa as the Niger itself reaches to the west. This river had been heard of by Browne, who penetrated into one of these eastern districts called Darfoor, and that traveller even names some of the tribes who live on its banks: a stream corresponding to the same localities had also been mentioned to Major Denham, one of the gentlemen who accompanied Clapperton on his first expedition. The existence of the eastern river had therefore been ascertained;* but the Landers now passed its mouth, and actually saw it discharge its waters into the Niger; its magnitude corresponded entirely with the report which had been received concerning it, and they mention the name of the same tribe (Yem-Yems) living on its banks, who had been heard of by Browne on the confines of Abyssinia. The fact, therefore, which had been reported from the earliest periods, that there was a communication by water in the interior of Africa from one extremity of the continent to the other, appears to be completely verified. By means of the Niger on the western part, and the Tchadda on the east, there can be no difficulty in passing by boats, from the vicinity of the Egyptian Nile, to the sources of the Senegal—an inland navigation of 40 degrees, or nearly 3000 miles in a straight line. This is an advantage enjoyed by Africa, analogous to that which the rivers Ohio and Missouri, stretching in opposite directions for almost the same extent, and meeting in the Mississippi, offer to central America. The Niger, however, is in one place, broken by rapids and shallows, which injure its navigation for about 100 miles; and the Tchadda may have some similar impediments, though, from the level on which it flows, they are likely to be less considerable.

There is another interesting circumstance connected with the Tchadda. Clapperton and Denham, in their first journey, saw a large fresh-water lake in the interior (called the Tchad), which received the waters of two or three considerable rivers. They heard of no outlet by which this lake communicated with the sea; but it is well known that all inland lakes which are *without an outlet* have their waters salt or brackish: the Dead Sea, the lakes Aral, Van, Urumea, Baktegan, Zaweh, are examples of this fact, and others might be named, not one instance being known to the contrary. It seems unavoidable, therefore, that this African lake, "*whose water,*" says Major Denham, "*is sweet and pleasant,*" should also have an outlet to the sea; and as the river Tchadda, in the lower part of its course, is only separated from its basin by a single chain of mountains, and there is no other large stream in its vicinity, the probability is that this river communicates with the lake. Other facts have been mentioned by African geographers which lead to the same conclusion. The bed of the lake is supposed to be about 1000 feet above the level of the sea, which, considering that the course of the river must be above 1500 miles, affords ground to suppose that the current is not broken by rapids, and may be navigable to its head waters. The facts at present known, therefore, favour the conclusion, that navigation may be practicable from the sea to this interior lake, on which the populous states of Bornou, Loggun, &c., are situated. Should this be really the case, the consequences would be of more importance than it is at present possible to anticipate.

The countries to which access has already been gained are sufficiently described in the travels of the Landers, and of Clapperton and Denham, to enable us to judge of their capabilities for commerce. They were previously as little known in Europe as America was before the time of Columbus, and their discovery lays open to enterprise and to observation a field as new as did that of Mexico and Peru. Their civilization is sufficiently far advanced to make commerce an object of importance with them, and property is as secure as in any part of India not directly under the government of Britain. The Landers saw large cities, in which there were regular fairs, and numerous commodities, such as cloths, fine mats for carpeting (a general luxury in warm countries), iron utensils of different kinds, grain, vegetables, nuts and fruits, dye stuffs, muskets, and slaves. In one place they heard the hum of voices on a market day, two miles before they approached the city where it was held. As a proof of the security of property, and the undisturbed peace of some districts, they saw large herds of cattle grazing in the fields under the care of children. They sent out their servant with valuable European goods for sale in the villages, and had no fears except for his own honesty. They saw, in one place, long trains of women going to market, with baskets on their heads filled with vegetables, &c.; and, in others, lines of pack-horses were observed, arriving from remote districts with produce for sale. It is not asserted that the country is in a high state of civilization, or that it is governed by written laws: on the contrary, the governors are frequently changed and assassinated; but the people, in the meantime, take little interest in such matters. They are at peace, they cultivate the soil, and they have many commodities which they would gladly dispose of for the new luxuries which Europeans can afford them. They produce indigo, palm oil, rice, gums and dye stuffs, hides, and the skins of wild animals, while their country is perfectly fitted for the cultivation of sugar, cotton, tobacco, cocoa, pepper, and all the other staples of tropical countries. Were the people savages, or tribes addicted to war, or were they even the subjects of any wide-spread despotism, which, in its caprice, might declare against all intercourse with foreigners, in such cases all these advantages would be thrown away. But they are a quiet, inoffensive, and even industrious race, resembling, in many respects, the inhabitants of the plains and river countries of India. The commerce of England may, therefore, derive the very highest advantages from the communications now opened with them.

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* The river is mentioned under various names, being called sometimes the Tchadda, sometimes the Quarra, and at others the Quolla and Quorra. All these are merely different ways of pronouncing the same word; Tchadda, and Quadda, or Quarra, passing into one another, like our *church*, *kirk*; *birch*, *birk*, &c. Quadda, Quarra, Quolla, are too like each other to be mistaken. The word Quadda, Quadd, or Tchad, is applied to all rivers and lakes in Africa, and seems to mean simply "water."

The following estimate of the population of the different parts of Africa, is given in the Weimar Almanac for 1837. Considerable latitude must, of course, be allowed in calculations regarding a quarter of the world so little known.

Abyssinia		4,500,000
Ashantee		3,000,000
Barea		300,000
Bornou		2 000,000
Dar Fur		200,000
Fellatahs		2,000,000
Guinea		7,000 000
Morocco		8,500,000
Senegambia		10,000,000
Senaar		1,500,000
Soudan, Sahara, &c.		20,000,000
Tripoli		1,500,000
Tunis		3,000,000
Interior and Eastern Africa		29,000,000
Foreign Possessions.		
British Possessions		162,000
Danish ..		3,000
Dutch ..		16,000
French ..		1,906,430
Portuguese ..		663,000
Spanish ..		11,481
Turkish ..	Egypt	2,514,000
	Nubia	1,185,000
United States		25,000
Total Population of Africa		96,284,911

AIRDRIE; a market-town in the parish of New Monkland, Lanarkshire, eleven miles east from Glasgow, on the highway to Edinburgh. It is said to owe its origin to a mineral well near the place, which formerly was much frequented, but is now neglected. The water is strongly impregnated with iron and sulphur. Airdrie has risen within these not many years from a small village to a thriving town. It is one of the new parliamentary boroughs, having all the privileges of a royal borough, and along with Lanark, Hamilton, Falkirk, and Linlithgow, sending a member to parliament. The vicinity abounds in iron-stone and coal, which circumstance is the great cause of its prosperity. The iron-works of Carron, Clyde, Calder, Gartsherrie, and Chapel-hall are partly supplied with iron-stone from this quarter, and vast quantities of coal are carried to Glasgow by the Monkland canal and the Garnkirk railway. Coal is also carried by the Ballochnie and Kirkintilloch railways to Kirkintilloch, and thence by the Forth and Clyde canal to Edinburgh. Besides the working of coal and iron, weaving for the manufacturers of Glasgow forms a principal occupation of the inhabitants. A neat town-house, containing prison, police-office, &c., has been lately built in Airdrie. A large cotton-mill, also, has been recently erected in the neighbourhood. The parish-church is situated on an eminence about a mile and a half from the town, but the town itself contains two or three chapels and meeting-houses. In Airdrie there is a circulating library, and also a public reading-room. Population in 1801, 2745; in 1831, 6594.

ALABASTER (*a*). Under this name are sometimes confounded two minerals, wholly distinct from each other, gypseous alabaster, or compact gypsum, and calcareous alabaster. *Gypseous alabaster* is found of a white, or yellowish, or greenish colour, semi-transparent, and capable of receiving a polish. Statuaries distinguish this as alabaster. Sometimes its colours are disposed in bands, and sometimes they are disposed in clouds: the former is always preferred. *Gypseous alabaster* is about twice as heavy as water, its specific gravity being 1·9. In transparency it is superior to white wax, allowing the light to pass through it, but not the forms of objects. By a slight calcination or baking, it is converted into plaster of Paris. It is very easily worked, but not susceptible of a very delicate polish, and is formed by the mason into vases, columns, tables, and other ornamental furniture. In a church at Florence, thin slabs of it are used in the windows, instead of glass. Among the ancients, the most esteemed variety came from Carmania and Upper Egypt. The alabaster used by modern Florentine statuaries comes from Volterra, and other parts of Tuscany. It is seldom procured in large masses, the largest statues not exceeding two feet in height. It is easier to cut than Carrara marble, but it is not so durable when exposed to the weather; the sulphate of lime, which enters into its composition, being more easily dissolved by the rain than carbonate of lime, which constitutes Carrara marble. At Leghorn there is a large establishment, where statues and architectural ornaments of this alabaster are sold; and from this mart the greater proportion of these productions we see in England are procured. When a candle or lamp is put into a vase of this alabaster it diffuses a mild and very pleasing light; and it is conjectured that the ancients lighted their temples in this manner, in order that the softness and vastness of the light might harmonize with the general character of the building.

The Derbyshire alabaster, of which there are splendid inlaid columns in the hall at Keddleston, is of the same kind with the Tuscan, but not so pure.

Calcareous alabaster, or calcsinter, is a species of stalactite, composed mostly of carbonate of lime, and is found of a variety of colours, pure white, yellowish, greenish, reddish, bluish gray. It is not quite so hard as Carrara marble, yet it receives a good polish. It is considerably heavier than gypseous alabaster, its specific gravity being from 2 to 2·8 times greater than water. Its transparency is about equal to that of white wax, and it burns to lime. Calcareous alabaster is distinguished into the common and oriental, the last division containing the hardest, finest, and best coloured pieces.

ALBANS, St. See *Saint Albans*, in text.

ALDEHYD, a new substance discovered by Liebig, as a product of the oxidation of alcohol and ether. It is a colourless, limpid and very volatile liquid, of a peculiar suffocating odour. It is prepared in largest quantity by distilling alcohol, manganese, and sulphuric acid. It is uniformly produced where alcohol becomes oxidised, and is largely contained in the nitric ether of the apothecary. It derives its chief interest from the fact of its becoming entirely converted into acetic acid or vinegar when exposed to air or oxygen. The process goes on most rapidly when the aldehyd is on platinum sponge. It is probable that aldehyd is the intermediate product in the process in the of converting alcoholic fluids into vinegar. As this process is conducted in Germany, the wine is permitted to percolate through a false bottom in a barrel: there is a constant circulation of air, and in the course of a very few hours the wine is entirely converted into vinegar. Now from the loss that is observed when there is a limited supply of air, it is thought by Liebig that part of the alcohol has been only so far oxidised as to have become aldehyd, which has escaped from its volatility.

ALDERNEY, (*a*); one of the Channel islands, is distant from Guernsey (north-east by north) about fifteen miles, or twenty from port to port; from Jersey about thirty-three miles from coast to coast, and forty-five from port to port; and about fifty-five or sixty miles south by east of Portland Bill, the nearest point of England. The communication with Guernsey is much more frequent and regular than with Jersey. Alderney possesses four vessels, the total burthen of which is only 150 tons. During the oyster season some of them ply on the French coast; but two, at least, run regularly to Guernsey, paying a visit occasionally to Jersey. The island is about 3¾ miles long, from north-east to south-west; about 1⅝ broad; and about 8 miles in circuit. The south-east coast is formed by picturesque and lofty cliffs, from 100 to 200 feet high; but as the island shelves towards the north-east, the coasts in that direction are of less elevation, and more indented with small bays, such as those of Longy or Câtel (query, Châtel—Castle?) bay on the east, and of Braye on the north-west. The last affords good anchorage, and near it is the only harbour in the island, that of Crabby, which, however, is fit for none but small vessels.

The town of St Anne (the only town in the place) contains nearly the whole population of the island. It is customary for the agricultural part of the community, as well as the commercial portion, to reside in it; and hence the place resembles rather a collection of farm-houses than a town. The jurisdiction of Alderney is carried on by a governor and one or two officials, though all criminal causes are decided in the courts of Guernsey, of which the other island is a dependence. St Anne can boast of very few good houses, and these are all of them the residences of the king's officers, or, as may be, of the minister or surgeon. The town has a very deserted look, and this may well be, seeing that so many of its inhabitants do really leave it during the day for their labours in the fields. At one time the farmers of Alderney profited highly by their celebrated breed of milch cows, but long since the British islands have been supplied with the breed sufficiently to render any reference to the original source unnecessary. The cows are small, but produce an immense quantity of milk; and fourteen pounds of butter per week is not uncommon from one animal. Though the town of St Anne, from the circumstances we have mentioned, is by far the most important point in the island, what may be called the country presents many objects worthy of attention. "The appearance," says Mr Inglis, "of the cultivated part of the island, is singular, owing to the very minute properties, and the odd way in which the proprietors have sown their crops. It is all laid out in narrow stripes of different sorts of grain, and in lucerne, potatoes, clover, tares, &c. These lie in all different directions, straight across and transversely; and to so great an extent has the division of property extended, that, in looking at a proprietor ploughing his stripe, it is difficult to see how he will find room to turn his plough on his own land. The ploughs which I saw at work were small wheel-ploughs, worked by three horses and two men. The total absence of farm-houses and cottages, and the total absence of trees or plantations of any kind, give to the island a bare aspect. Still, under a bright sun, there is beauty every where; and the spangled grass, and furze hedges, covered with their bright and fragrant blossoms, and the song of innumerable larks, and the pretty cows tethered among their clover, were sufficient for any traveller, unless for the churl who can walk from Dan to Bersheeba, and say, 'all is barren.'"

The population of Alderney is decreasing by emigration, which is attributed to want of trade and employment. The majority of the emigrants go to Guernsey and Jersey, some to America. The population was, in 1813, 1308; in 1821, 1151; in 1823, 1066; and in 1831, 1045; of whom 447 were males, and 568 females. The inhabitants are a good deal engaged in fishing.

ALGIERS, (*a. to the article Barbary States.*) The town of Algiers is situated in 36° 49′ N. lat. 3° 25′ E. lon. on the southern shore of the Mediterranean sea, the waves of which wash its walls. It is built in the form of an irregular triangle, the base of which is formed by the sea-coast. The streets of the town are remarkably narrow, filthy, and uneven; very few of them cross others at right angles, and very few are straight. The principal street extends from east to west, traversing the town in its greatest breadth: its length is 1200 paces, and its breadth twelve. It contains the best shops, the houses of the principal merchants, and the market for corn and all provisions: in all the other streets it is rarely that two persons can pass abreast. The inconvenient construction of the streets manifests not only the bad taste of the inhabitants, but indicates the absence of those numerous and complicated relations which are found in modern European towns, as well as the want of vehicles of burthen or convenience. Similar causes produced towns of a similarly bad construction in Europe in the middle ages. The houses, as in most other Moslem towns, are square, enclosing an open court in the middle, into which, and not into the street, all the windows open. The roofs, as in most southern and oriental towns, are flat, and in the evening the families resort to them to enjoy the sea-breeze. Formed into terraces, they often support gardens with pavilions, or closets, to which the master of the house withdraws at the hour of the *siesta;* and, reclining upon a sofa, amuses himself by smoking the tobacco of the Levant, or by chewing opium, while his attention seems directed to the sea, the softened roar of whose waves lulls him to slumber. As the houses are contiguous, a person may walk from one end of the town to the other along the terraces; but it is, nevertheless, very rare that any one complains of having his house robbed. Some few houses are of a very superior description, being paved with marble, and lined with wainscot, carved with some elegance, and gilt or painted in the best style of Moslem taste. There are some handsome buildings without the town, and a great number of tombs, some of which are furnished with oratories, to which the inhabitants resort every Friday.

The numerous expeditions fitted out to curb or punish the Algerine pirates have been noticed in the article *Barbary States.* In 1829, France fitted out an armament, not only to chastise the Algerine government, but to take permanent possession of the country and of the port, which had so long been a den of robbers. This expedition consisted of 37,639 men, with the requisite cavalry and artillery. The number of vessels altogether was 644. The commander, Marshal Bourmont, conducted his system of attack with great prudence, and gave France possession of Algiers with very slight loss. The captive dey, or sovereign, was sent to Europe, and he now lives on an allowance as a private individual. The expenses of this expedition were amply repaid to France by the public treasures of gold and silver which were found (amounting to about two millions of pounds sterling); besides £300,000 of stores. She was left mistress of the finest district of Northern Africa, and had besides the satisfaction of breaking up thoroughly a nest of pirates, who had kept the Mediterranean seas under contribution for nearly two centuries.

When the French first obtained possession of the country, their design was to convert it into a colonial settlement, and to introduce French cultivators with habits of European industry, and more efficient modes of labour. They accordingly brought over a number of settlers both from France and from Rhenish Bavaria, established a *ferme modèle*, or pattern farm, and gave every encouragement to colonists who had either skill or a little capital. It was soon found, however, that there were difficulties in the way of carrying this plan into effect, which had not been anticipated. In the first place, the French had calculated on taking possession of all the lands held by the Mahommedan religious establishments, and which were considered as public property, but it was soon found that the greater part of these were only nominally in possession of the church (if the *mosque* may be so called), having been merely conveyed in a certain form to the priests, in order to remain under their protection for the use of the actual owner or his heirs, in case of any attempt at confiscation by the government. The priests were in fact only trustees for others. This narrowed greatly the choice of lands which it was intended to bestow on the new colonists. In the next place, the settlers themselves, being generally poor people, were without means of procuring effectual shelter from the heat or dews, and accordingly numbers of them fell victims to the change of climate. Their manner of living was, besides, much more expensive, and required much higher wages to maintain them in health, and in working condition, than that of the natives of the country. There was an additional reason, we believe, which must always prevent French colonies of this kind from being successful, that France has neither capital nor skill to throw away on such enterprises. All the people who have either stock for carrying on business, or skill for any useful trade, are wanted at home by the necessities of their own country, and have no temptation to emigrate.

These causes, and perhaps others, have now determined the French to give up their original idea of colonising the country, and of introducing European modes of agriculture. The object now is, by establishing a regular and steady form of government, to give confidence and alacrity to the industry of the natives themselves, and to lead them to improvement, by the prospect of securely enjoying the fruits of their own labour. Roads are in progress for this purpose between some of the principal towns, and every means are taken to prevent the incursions of those demi-savage and hostile tribes who have been accustomed to harass the country from their fastnesses in the mountains.

The people who are thus to be managed, consist of several distinct races.*

The following enumeration of the different tribes is given on the faith of the French "Journal des Sciences Militaires":—

Moors and settled Arabs	[illegible]
Independent Arabs	[illegible]
Kabylies or Berbers	[illegible]
Jews	[illegible]
Turks and Christian renegades	[illegible]
Kolouglis, or descendants of Turks	[illegible]
	[illegible]
European population.	
French settlers, merchants, &c.	[illegible]
English subjects (chiefly Maltese)	[illegible]
Spaniards	[illegible]
Sardinians, Germans, Italians	[illegible]
	[illegible]

The same amount of population is stated by M. Gravery de Henesro, the Swedish consul; but the numbers of the several classes are with him very different: the reason of which no doubt is, that the distinctions betwixt the classes are not very obvious, and in some cases cannot be at all recognised. He reckons, however, 70,000 negroes, whom we do not find in the French account.

The population of the town of Algiers was estimated at 70,000 (Captain Roset makes it no more than 30,000) before its subjection to the French, since which it has undergone considerable diminution—perhaps of one-fourth—by emigration; but, on the other hand, it is to be remembered that the French army of occupation in the territory amounts to 24,862 men, with 2,775 horses. The prices of commodities have undergone a very considerable increase during the period in which the town has been under French authority. Thus, the average price of an ass has augmented from 12s. to £2, 10s.; a horse from £2 to £8; a mule (the use of horses was interdicted to the Moors) from £6 to £14, an ox from 15s. to £2, 10s.; and a sheep from 2s. to 10s.: the camel, of which the French make no use, has preserved its former price. The prices of other necessaries have increased in nearly the same proportion as those of animals: thus, for instance, the value of corn and wood has been doubled.*

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* Algiers is daily assuming a more European aspect, hats are nearly as often seen as turbans, cigars have replaced the long pipes, and the Moorish bazaars give way to the glass-windows of French shops. Upwards of fifty merchants have established counting-houses; and a considerable number of mechanics and tradesmen, including of course a full proportion of modistes, couturieres, and perruquiers, are thickly scattered about. Eleven grand cafes with billiard-tables, four grand hotels (which are, however, execrable), three restaurateurs, one hundred eating-houses, two *cabinets littéraires*, [illegible], a cosmorama, &c., have already been established, and [illegible] and omnibuses were shortly to ply from the Bab [illegible] to Mustafa Pasha, and from Bab el [illegible] to the Dey's country villa. The Kazbah is a little town in itself, containing the [illegible] Dey's palace, and several other houses and gardens. The palace has suffered much from the French soldiery, who, on first occupying it, pulled up the pavement, tore down the glazed tile-coating of the rooms, and otherwise committed great injury in their eager search after treasure. The marble flooring, the arched galleries, supported by marble pillars of fantastic but graceful forms, which surrounded the open court, the elegant fountains which scattered coolness around, and the latticed shahnesheens, still, however, remain to pay the fatigue and trouble of the visitor's ascent. The *corps-de-garde*, at the gate, and the sycamores, banana-trees, and vines, which surround it, together with the mixture of French uniforms and Moorish costumes, formed altogether a beautiful little picture—as did also a wine-shop, shaded by a vine-covered pergola, under which were seated groups of soldiers playing at cards, drinking, flirting with some *piquante* French brunette, or teaching "Trompette," the dog of the regiment, a variety of tricks.—*Temple's Excursions in the Mediterranean*, [illegible]

ALKALIMETRY means the process for testing alkalies. The principle of all plans of alkalimetry is the same, namely, trying how much acid is required to saturate a given weight of the alkali. The acid generally employed for this purpose is the sulphuric, but nitric acid answers equally well, and is indeed in the whole preferable, from this acid forming no insoluble salts, and therefore admitting of other tests being applied to the neutralised solution. The acid is brought to a proper specific gravity, and is then of such a strength that 100 measures of it in a graduated instrument, called the alkalimeter, exactly neutralise 170½ grs. of anhydrous carbonate of soda. This quantity is chosen because it contains exactly 100 grs. of real soda. It is obvious that on treating 100 grs. of any alkaline salt of soda with this standard acid, the per centage of real soda must be immediately obtained; for, were the 100 grs. all pure soda, they would require 100 measures of the acid; not being pure soda, they require for neutralisation that part of a 100 which they in reality contain. Litmus paper is used to ascertain the precise point of neutralisation; a little drop of the liquid is taken out on the end of a glass-rod and applied to the paper. If the paper be rendered blue thereby, more acid is required; if it be reddened thereby, there has been too much acid added, and the limits of neutralisation over-stepped. To remedy this blunder, an alkaline solution of known strength may be kept to neutralise the excess of acid. This is the plan adopted by the bleachers and painters for ascertaining the strength of their soda-ash, of rough carbonate of soda, as well as the value of kelp, barilla, &c. Some such process as the above is absolutely necessary, where the price of an article of commerce differs according to the proportions of the ingredients in each sample. To test the potashes and pearl ashes of commerce, the same standard acid is employed, but 152½ grs. are employed instead of 100 of carbonate of soda. The number of measures of acid required to produce neutralisation gives the per centage of potash in the specimen. The impurities of potashes are sulphate of potash and common salt, and of soda-ash, the sulphate of soda and common salt. The positive presence of these bodies is indicated by nitrate of barytes for the sulphates, and nitrate of silver for the common salts These two tests must be applied to the solution of the alkalies in pure nitric acid and distilled water. Crystals of carbonate of soda contain 21·8 p. c. pure soda, and good soda-ash from 42 to 48 p. c.

ALNWICK, in the county of Northumberland. (a). Population in 1831, 6788.

ALPS (a). To the readers of history, and of poetry, the Alps are a familiar name. From the days of the Romans, down to the present century, their inaccessible heights, eternal snows, and difficult and precipitous defiles, have given them a celebrity, hardly possessed by any other features of continental Europe. Placed as a natural barrier between nations frequently dissimilar, or hostile to each other, they have stood, abrupt, and impenetrable, as they were left by the deluge; and the little that man could do, in opening their avenues, or smoothing their passes, remained almost unattempted until the nineteenth century. But within the times of the present generation, and especially within the last five or six years, the aspect of these mountains has become less solitary and forbidding. Over nearly all the important defiles, smooth and spacious roads have been constructed, rocks have been penetrated, abysses have been spanned, terraces upon terraces have scaled the loftiest passes, —and the traveller who now rolls over them at his ease, secure of comfortable hotels, and regular relays of post horses, troubles himself little about the difficulties against which Hannibal urged his elephants, and Bonaparte dragged his artillery.

The mountainous country, usually denominated the Alpine region, covers a great portion of the continental territory of the king of Sardinia, the republic of Switzerland, and the Tyrolese dominions of Austria, together with portions of the immediately adjacent states. But the great or principal chain may be considered as forming a half oval, or crescent, having the valley of the Po in its centre, and the Gulf of Venice at its base. This chain commences in northern Italy, where it is continuous with the Appennines, and, skirting closely upon the Mediterranean along the Gulf of Genoa, turns to the north through Piedmont and Savoy, in which countries it throws up its loftiest eminences. It then passes easterly through Switzerland and the districts of Tyrol and Carniola, until it is merged in the less elevated ranges of eastern Europe. The geographical effect of this distribution is to separate the waters of the Po, from those of the Rhone, the Rhine and the Danube.

The most interesting features in the Alpine chain, are the depressions, or passable gaps, and the extreme elevations. The depressions, or notches in the summit of the ridge, furnish avenues, over which mankind, following the tracks of the chamois, have constructed mule paths, and afterwards roads practicable for carriages. These are seldom less than five thousand feet above the level of the ocean, and are mostly named from the mountains near which they pass, as the Simplon, the St Gothard, and the Splugen. The great elevations are for the most part abrupt and towering peaks, many of which, from their sharpness and steep acclivities, have received the appellation of *horns* and *needles*. Among the most elevated peaks are Mont Blanc, Mont Cervin and Monte Rosa, situated in the chain which divides Piedmont from Savoy and Valais;—the Finstraahorn, the Schreckhorn (horn of terror), and the Jungfrau, in Switzerland; and the Ortler-spitz in the Tyrol. The distinction of being the highest mountain in Europe has been lately contested between Mont Blanc and Monte Rosa. Since the observations of De Saussure, no doubt had been entertained that Mont Blanc was entitled to this precedence. But in 1819 one of the inferior summits of Monte Rosa was ascended by Messrs Zumstein and Vincent, who took trigonometrical observations of the higher peaks, and arrived at the conclusion that these inaccessible summits were more elevated than the top of Mont Blanc, by some hundreds of feet. Their account, published in the Memoirs of the Academy of Turin, immediately drew towards Monte Rosa the attention of the scientific, and travelling public, new admeasurements were undertaken, and from an elaborate topographical account and survey of this mountain by Baron Welden, published at Vienna in 1824, it would appear that the altitude of the two eminences is nearly equal, Mont Blanc, however, having the precedence by about eighty-eight toises.*

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* The probable height of Mont Blanc is about 14,764 Paris feet. That of Monte Rosa 14,222. See an account of the latter mountain in Brewster's Edinburgh Journal of Science, vols. i. and ii. As the upper stratum of these mountains consists of snow, it is very probable that their height varies in different seasons.

Mont Blanc derives its name, though not a distinctive one, from its mass of perpetual snows,—Monte Rosa from the circular distribution of its peaks, which enclose a central valley or amphitheatre. Mont Blanc has been repeatedly ascended, though with great danger and difficulty, by adventurous travellers; but the upper summits of Monte Rosa, though often attempted, have never yet, we believe, been attained.

On the tops of the loftiest mountains water rests like a mineral substance from age to age, fixed in the form of consolidated ice and snow. Immense masses, which gather upon these heights in winter, seek afterwards a lower level, in obedience to the laws of nature. This fluctuation, the result of necessary influences, gives birth to scenes of unequalled sublimity and beauty, and actuates, as it were, the moving scenery of the Alps. The cascade, the torrent, the progressive glacier, and the overwhelming avalanche, are but the shiftings, by which a disturbed element seeks to resume its wonted equilibrium.

The traveller, passing in summer through the valleys of the Alpine regions, sees often before him what appears to be a white thread, suspended from the mountain side. This he knows to be a waterfall, but if he has seen Niagara, or even Terni, he will be struck with the great length of the cascade, perhaps five or six hundred feet, compared with the slender dimensions of the stream which constitutes it. These cascades generally reach the ground by successive leaps, but now and then a case occurs, in which the fall is unbroken, and the apparent slowness, the effect of distance, with which the air is traversed by the descending waves and volumes of spray, gives to the spectator the idea of something which floats, rather than falls. We recollect to have seen instances, in which a considerable stream jetting from the top of a precipice, was dissolved in spray, and wholly lost to the sight, before it had accomplished half its destined descent. A brook, starting from beneath and fed by the perpetual shower, gave evidence that the material of this beautiful illusion was not lost. A fall of this kind, singularly picturesque, is seen in the vale of Misocco, on the southern side of the Bernardino passage. The celebrated fall of Staubbach, in Lauterbrunnen, nine hundred feet in height, is of the same description.

The long valleys which separate the mountainous spurs, usually afford beds for torrents, constituting the head waters, from which are accumulated the great rivers of Europe. These frequently occupy the bottoms of deep ravines, and when swollen with rains, or melted snows, exhibit a scene of obstructed, yet irresistible violence, which impresses the spectator with the deepest awe. On the principal roads, these are crossed by bridges of substantial masonry, in constructing which, it seems often wonderful how the workmen could have found support. In some cases, we are told, it was found necessary to suspend stagings upon cords from precipices far above them. In the wilder and less frequented paths, frail wooden bridges, and sometimes trunks of fallen trees, constitute the means of passing. It has happened that, in cases of emergency, both men and animals have crossed these torrents, even without the aid of bridges, and in the face of difficulties seemingly insurmountable. In 1800, a detachment of French troops under General Bethencourt, was ordered to occupy the pass of Yéselles, and proceed upon Domo d' Ossola. Their march was interrupted by the destruction of a bridge which led round a precipice, and over an abyss sixty feet in width. A volunteer, at great hazard of his life, by supporting himself against the sides of the precipice, in the holes cut for the timbers, succeeded in carrying a rope to the opposite side. Upon this rope, suspended over the abyss, with their feet braced against the lateral wall, or such other objects as might present, the whole detachment passed, one by one, the commander setting the first example. The names of the officers are now engraved upon the rock. When the last man had left the bank, five dogs which belonged to the party, threw themselves into the current. Three of them were carried down, while the others, by dint of greater strength, succeeded in gaining the opposite side, and crouched, half dead, at the feet of their masters.

The *lavanges* or avalanches take place whenever the mass of snow accumulated on the heights, becomes, either from its own weight, or the insufficiency of its base, incapable of supporting itself. The avalanches of different seasons are not equally dangerous. Those of summer are confined to the highest mountains, and seldom reach the places frequented by mankind. Those of winter also, though sometimes terrible in their effects, yet being often composed of the light and new-fallen snow, slide downwards in smaller masses, and with less violence, so that men and beasts have been dug out unharmed from beneath them. But the avalanches of spring which take place after the sun has begun to loosen the hold by which projecting masses are detained on the brink of precipitous summits, are by far the most dangerous and destructive. Imagination can hardly conceive the fearful sublimity, and havoc with which these descents are attended. Columns of consolidated snow, whose extent the eye can hardly span, sweeping downwards for mile after mile, bearing with them the loosened rocks and uprooted forests, and discharging themselves at length on the valleys below with a violence under which the earth trembles,—are the common and yearly phenomena of these romantic regions. A fallen avalanche, says Ebel, sometimes covers more than a league of country. The concussion of the atmosphere is so great, that houses have been overthrown, and men prostrated, at a distance from the scene of devastation. At the season of avalanches, when the impending masses are just ready to loose their hold, the inhabitants believe that the smallest noise or shock given to the atmosphere, may start them into motion. Hence, in many places, they take off the bells from their horses and cattle, and steal silently through the dangerous paths, choosing the early part of the day, before the sun has begun to act with power. It is also common to discharge a musket, by way of proof, before entering the suspected defiles.

As in other mountainous countries, not only the snow, but sometimes the earth itself, is loosened and slides downward, carrying desolation in its progress. A remarkable slide of this kind occurred the village of Goldau, in 1806. In September, after a long continuance of rain, one of the summits of the Rossberg, was detached from the mountain and fell into the valley and lake beneath, overwhelming the villages of Goldau, Boessingen, and Rothen. The houses, cattle and nearly hundred of the inhabitants, were destroyed by the event. Some travellers from Berne, says Sim arrived at Art, and set off on foot for the few minutes before this catastrophe. A part, who were behind the rest, observed that some strange commotion was taking place on the summit of the Rossberg,—and immediately a flight of stones like cannon balls, traversed the air above their heads; a cloud of dust obscured the valley; a frightful noise was heard, and they fled. As soon as the obscurity was so far dissipated, as to make objects discernible, they sought their friends who had preceded them, but the village of Goldau had disappeared under a heap of stones and rubbish one hundred feet in height, and the whole valley presented nothing but a perfect chaos. Nothing is left of Goldau, but the bell, which hung in its steeple, and which was found about a mile off. About fourteen miserable objects were dug out alive, from beneath the ruins.

The vestiges of catastrophes, similar to the above, are seen in various parts of Switzerland. At the entrance of the Val Blegno, not far above Bellinzona, may be seen the vast *debris* of a mountain, which fell across this valley in the year 1512. The fallen mass arrested the course of the river Blegno, and formed a large lake, which continued above two hundred years, but which, in 1714, burst a passage, and swept its way, with great destruction of lives and property, into the Lago Maggiore.

The name of glaciers, in its broadest sense, has been applied to all accumulations of ice and snow, which remain through the year upon elevated mountains. In its more limited meaning, it is restricted to those masses of hardened snow, which occupy the higher valleys and northern sides of ridges, extending downward to the borders of vegetation. They are generally found in the valleys and chasms, which run from east to west, in which they are more protected from the rays of the sun. Those of them, which have much inclination, exhibit a diversified surface, which has been compared to the waves of the sea during a storm. The alternate thawing and freezing of a portion of the snow, give to the remainder, among which it percolates, a degree of density approaching that of solid ice. The depth of the glaciers is supposed to be from one to six hundred feet and upwards. Vast crevices and chasms intersect the entire mass, opposing serious impediments in the way of adventurers who traverse them, and exhibiting the interior ice of a dark blue appearance to the eye. It usually happens, that in the lowest glaciers, the heat of the earth, especially during summer, dissolves the ice at the bottom, giving rise to extensive vaults, from beneath which streams of water issue. A striking instance of this kind is seen in the source of the Arveiron, which takes its rise under the Mer de Glace, in the neighbourhood of Chamouni. Some of these vaults have been found a hundred feet in height, and sufficiently extensive to undermine portions of the glacier, which settle down upon them with tremendous noise. Where there is sufficient declivity the glacier advances, during these changes, toward the subjacent valley, and thus appears to extend itself by a sort of natural growth. When Sir J. E. Smith visited the Montanvert in 1787, the Arveiron derived its source from several cascades, which fell from the top of the glacier, a sufficient evidence that it had then settled so as to obliterate the cavities underneath. Rocks of large size are occasionally carried along on the surface of the glacier, serving as landmarks, to measure the progress of the whole mass. Others are accumulated in high ridges along the borders of the ice, constituting what are called *moraines*. Ebel computes that from Mont Blanc to the Tyrol, the number of glaciers is not less than 400, many of which are six or seven leagues in length. It is not to be understood that the uniform tendency of these bodies is to extend themselves. During warm seasons they sometimes diminish in a very rapid manner, by the melting of their lower extremity.

Previously to the year 1800, and even at a later period, most travellers who entered Italy from the north, were obliged to cross the Alps by mule paths, never convenient, and sometimes extremely difficult. The transportation of merchandise, and especially of warlike stores and artillery, was an undertaking of the most arduous character, of which the passage of the Grand St Bernard by the French invading army in 1800, is a well known example. After the conquest of the Italian states, the enterprise of Napoleon Bonaparte planned and executed two great military roads, practicable for carriages and artillery, one extending from Geneva to Milan, across the Simplon; and the other leading over the pass of Mont Cenis, and opening a communication from Lyons to Turin. These roads, it is but small praise to say, impress every traveller with astonishment, and are monuments of consummate skill in the engineers, who seem to have brought Herculean powers to subdue what nature had intended to be insurmountable. In the Strada Sempione at Milan, a triumphal arch was begun by Napoleon, at the termination of the Simplon road, to commemorate the completion of his stupendous enterprise. It is of white marble, and is ornamented with bas reliefs, representing the victories and treaties of the Emperor. After his fall, this structure, one of the largest and most beautiful of its kind, was suffered to remain unfinished, and was even threatened with dilapidation. Travellers who arrived from the mountains, fresh in their admiration, were accustomed to vent their displeasure upon the penurious jealousy of the Austrian government, which neglected to complete this monument, covered as it was with the testimonies of their own humiliation. But Napoleon is now a dead lion, the Austrians have resumed the work, and now the structure may be considered as nearly completed. Unfortunately, however, for the objects of the founder, they have not been content to complete the structure, but have likewise gone on to complete the history. The tablets beneath, which represent the battle of Marengo and the humiliating treaties which followed, are allowed to remain unharmed; but they are surmounted with others of equal execution, setting forth the battle of Waterloo and the abdication of Bonaparte. The triumphal chariot, and bronze horses, which were to support the statue of Napoleon upon the top, will be occupied by an allegorical figure representing Peace. This is consonant to justice, and historical truth. For every road which Napoleon made over the Alps, peace has since caused the completion of three times the number, all equally deserving the wonder and gratitude of the public. The traveller, at his ease, may now ride into Italy from any point between Marseilles and Vienna. Broad highways are completed over the Cornice, the Col de Tende, the Genévre, the Bernardino, the Splugen, the Brenner and the Stelvio. Last summer the St Gothard was opened for carriages, and a road over the Maloya was nearly finished. Upon most of these, the yearly influx of travellers to Italy has justified the establishment of regular post houses.

To Napoleon is due the credit of having set the example, and proved the usefulness of these great avenues. But the years of peace, which have followed his dethronement, while they have indefinitely increased the amount of communication between Italy and other countries, have at the same time afforded to the governments concerned, the leisure and means requisite for multiplying these works of public utility.

The Alpine highways resemble each other in their great features, and are among the proudest constructions of art. They would almost impress us with the belief, that nothing is impracticable to ingenuity and labour. These roads usually pursue the course of streams, or valleys, gaining a higher level on their sides, as occasion offers, and at length climbing the principal ridge by what are called *tourniquets*, a succession of terraces connected at their ends alternately in a serpentine manner. Their course often lies along the sides of precipices, jutting out over fearful depths, or crossing torrents and ravines upon bridges of giddy height. Sometimes it appears as if the road had come to an end, against an insuperable steep, or projecting spur of the mountain. But here the skill of the engineer eludes the difficulty, sometimes by throwing a bridge through the air, to the opposite side, and sometimes by entering the rock itself with a subterranean gallery. In places particularly exposed to avalanches, the road either buries itself in the rock, or is protected by massive stone arches, forming covered ways, over the passages exposed. Much injury, still, is done, every year, to these roads by the descents of snow and of water, and they are kept in repair at great expense, by the governments to which they respectively belong.

The highest of the passes over which a carriage road has been constructed, is that of the Monte Stelvio, on the route from Botzon to Milan. It was made by the emperor of Austria, since 1814, to establish a communication with the Milanese, without quitting his own territory. The summit ridge, which it crosses, is more than nine thousand feet above the level of the sea, and seven hundred above the estimated line of perpetual snow, in its latitude. This great elevation rendered it one of the most arduous roads in its formation, as it is one of the most difficult to keep in repair. It was found necessary to construct from two to three thousand feet of galleries or covered ways, to shelter the road from avalanches and falling rocks, which sweep over it in certain places. "On this road," says Mr Brockedon, "shortly after leaving Prad, the magnificent mountain of the Ortler-spitz opens suddenly on the view of the traveller, with a vast and appalling effect, as it is seen from its extreme summit to its base, robed in everlasting snows, which descend on its sides in enormous glaciers, and stream into the valley below. Immense masses of rock, in themselves mountains, throw out their black and scathed forms, in striking contrast with the brightness of the glaciers which they separate." This part of the route, or rather the whole ascent from Drofoi, the author considers "without a parallel in Alpine scenery."

The passage of the Brenner, leading from Inspruck to the Lago di Guarda and Verona, is the lowest which crosses the great chain of Alps, being only 4700 feet above the level of the sea. It is also one of the oldest of these roads. A dark, narrow valley between Sterzing and Mittenwald, is famous for having been the place of a successful resistance of the Tyrolese, under Andrew Hofer, against the French and Bavarian army in 1809. Great numbers of the latter were destroyed by stones rolled down upon them *from* the heights which overhang the defile.

The pass of the Splugen, leading from Coire, the capital of the Grisons, to Lake Como, is said, in Starke's Guide-book, to "surpass in magnificent, sublime and awful scenery, every other carriage road in Europe." We know not how far this exclusive praise may be just, but we are certain, from ocular conviction, that a portion of this road, called the Via mala, extending several miles between the villages of Andeer and Tusis, richly merits all the terrific encomiums it has received. It is the deep and narrow gorge through which the Hinter Rhine makes its escape from the mountains, between mural precipices a thousand feet in height, and just far enough asunder, for about four miles, to furnish a scanty bed to the torrent. How the Romans made their way through this chasm, into Rhætia, or the barbarians afterwards broke through the same track into Italy, no one at the present day can imagine; except by supposing them to have diverged to the neighbouring mountains; for the sides of the chasm are perpendicular rock, and the bottom is monopolized in a most unqualified manner, by the furious and turbulent Rhine. The modern road is a shelf, or notch, formed about midway in the precipice, and several times disappearing within the rock, for many rods together. A bridge crosses the chasm, at such a height, that the Rhine, always chafed and foaming, looks, from it, like a white cord, in the perpendicular distance; and a large stone, dropped from the parapet, seems floating for several seconds in the air, and when it strikes the water, a loud explosion is sent upward. In November and December, 1800, a French army of reserve, under Macdonald, crossed the Splugen, enduring the horrors and hardships of an Alpine winter, being arrested by the obliteration of the path, and losing many men and horses, by the avalanches. The sufferings of this passage are recorded by Count Philip de Segur, a well known historian of military disasters.

On the north side of the ridge of Splugen, and near the village of the same name, a road diverges through the valley of the Rheinwald, and crossing Mount Bernardino, follows the course of the Moesa till it joins the Ticino, and the road from St Gothard. It then continues to the Lago Maggiore and a branch of it to the Lugano. On the principal lakes there are now established steamboats, which ply daily between the extremities of these waters. We observed, that they generally bear the classical names of the lakes which they traverse, as Il Lario, Il Verbano, Le Leman, &c. The scenery afforded by the passage through Lakes Como and Maggiore is exquisitely picturesque.

Persons going from central Switzerland by Altorf to the Lake Maggiore, may now cross in carriages the pass of St Gothard, celebrated alike for its romantic scenery, and its military history. The name of Suvaroff is engraved on a rock, near the desolate summit, at a place where that commander obtained a victory over the French in 1799. The celebrated Devil's Bridge, over the torrent of the Reuss, is a single arch of seventy feet span, thrown across a rushing cataract, at the height of a hundred feet above the water. "It is impossible," says Mr Brockedon, "to think of such a structure, in such a situation, without shuddering at the idea of the danger to which those who built it must have be exposed." Yet this bridge has more than once been the scene of conflicts between the French and Imperialists, in the campaign of 1799; and once during the heat of an engagement, while the French under Lecourbe were in the act of charging the Austrians, thirty feet of the bridge separated and fell from the parapets, precipitating all who were upon it into the gulf below.

The fame of the rout of the Simplon has reached all persons, who have interested themselves about the Alps, or Napoleon Bonaparte. It has been customary for most travellers to take this road either in going into Italy, or in returning from it, thus gaining a direct conveyance between Geneva and Milan. Considered as a work of art, the Simplon road probably exceeds all the others, in the neatness and architectural finish of its parapets and bridges; and it is exceeded by none in the magnitude of the difficulties overcome by the French and Italian engineers employed in its construction. The great gallery near Gondo is 596 feet long, and is cut through solid granite. Its southern extremity, where a bridge crosses the waterfall of Frassinone, at the entrance of an impassable gorge, is almost unequalled in picturesque and imposing effect. The Gallery has lateral openings to admit the light, opposite to one of which, the following inscription is cut in the rock,—ÆRE ITALO 1805. The part of the road which is on the Swiss side of the Simplon, was completed by French engineers; but the southern half, which is by far the most difficult, was executed by Italian artificers, under the Chevalier Fabbroni, at the expense of the Italian states.

The valley through which this road passes, extending through the Canton of Valais to the Pays de Vaud, is enclosed by a rampart of the highest mountains in Europe, having the peaks of Piedmont on one side, and the Bernese Alps on the other, some of which rise more than 10,000 feet above it. It has been considered as the deepest valley in the known world. Aware of this circumstance, the traveller receives, from the scenery around him, impressions of sublimity, such as belong only to the presence of natural objects, which are known to be unequalled in their kind. They are emotions like those which may be inspired by the river Mississippi, lake Superior, or the cataract of Niagara. Beyond the immediate effect on the senses, there is a deep and commanding interest, a pervading solemnity, which call on us to pay homage, to what has never been out done. But in this valley the beautiful also mingles with the sublime, and the solitudes which shelter in its infant growth, one of the most rapid and turbulent of rivers, have gathered round it the elements of fitness, which convey to the mind ideas of a recess and sanctuary of nature.

> "'Tis lone,
> And wonderful and deep, and hath a sound
> And sense and sight of sweetness. Here the Rhone
> Hath spread himself a couch, the Alps have reared a throne."

The pass of Mount Cenis, already mentioned, and that of Mount Genévere, made by Napoleon between Grenoble and Turin, are carriage roads, containing features of the same general kind with those which have been described. But the Cornice, or Mediterranean road, is essentially different from the rest, being not so much a pass of the Alps, as it is a passage by which the Alps are avoided. It is true that the Maritime Alps here come down to the sea so abruptly, as to leave no room for a level passage between the mountains and the water. Nevertheless an excellent road is now constructed, which no where rises to a great height, and by which invalids travel to Nice and to Italy, at all seasons of the year. The Mediterranean way was known to the ancients, and it was by this pass, says Mr Brockedon, that Julius Cæsar penetrated into Italy when about to engage in his contest with Pompey. This road presents, from many of its eminences, splendid views of the sea beneath, while, on the other hand, it is distinctly seen along the coast, from the steamboats, which ply between Marseilles and Genoa.

It will be observed that the roads which have been made practicable for carriages, are principally large thoroughfares, by which intercourse is carried on between Italy and the adjacent states. But a vast number of mountain passes, in less frequented directions, are still traversed only by pedestrians and mules; or in some cases by a low, narrow carriage, called a *char à banc*. Of this kind are the various avenues to the vale of Chamouni, the fearful pass of Gemmi near the baths of Lenk, the defiles of the Grimsel and Gries, which approach the sources of the Rhone, the various paths by which the Oberland is traversed, numerous tracks which lead up the sides of mountains, among which should not be forgotten the Wingernalp, beautifully described by Simond, from which the traveller at midsummer, witnesses in safety the hourly fall of avalanches from the opposite side of the Jungfrau.

The passes of the Great and the Little St Bernard are interesting from their proximity to Mont Blanc, lying on opposite sides of it; also from their scenery and historical associations. The former is well known for the Hospice, situated near its summit, inhabited by a benevolent order of monks, whose business is to rescue and relieve distressed travellers. It may seem singular that neither of these long and well known passages, has yet been made the site of a carriage road. But the king of Sardinia has shown himself less fond of public improvements of this kind, than his more communicative neighbours.

A controversy has been agitated with some zeal, in regard to the particular pass by which Hannibal crossed the Alps with his Carthaginian army. Different speculators, who have endeavoured to trace his track, by the histories of Livy and Polybius, have assigned the Monte Viso, the Genêvre, and the Mont Cenis, as corresponding in their situation and character to the route he is said to have pursued. In a work entitled "a Dissertation on the Passage of Hannibal over the Alps, by a member of the University of Oxford," the author, after an elaborate investigation of the subject, decides on the Little St Bernard, as the true route of the Carthaginian army. Mr Brockedon adopts the same opinion, having carefully examined the features of this pass, in reference to the historical data which have reached us. Hannibal, it seems, on his arrival from Spain, crossed the Rhone, probably somewhere near Avignon, and ascended that river above its confluence with the Isaure. He afterwards passed eastwardly towards the mountains, encountering the Allobroges and other warlike tribes on his way. It is to be regretted that the names of places are not marked with sufficient distinctness by Polybius, the historian who is chiefly relied on in this matter.

ALTAR (*a*); a place on which offerings or sacrifices were made. It was called *bomos* by the

Greeks, in a general sense; *aræ* and *altare* by the Romans.

The use of altars must have been as ancient and general as the use of sacrifices and offerings; and were erected in temples, porticoes, peristyles, in the open air, and on the summits of mountains. The larger temples had generally three altars: the first placed in the sanctuary, or adytum, at the foot of the divinity; the second at the door of the temple; the third was portable, and called anclabris, on which were placed offerings and the sacred vases.

In early times they appear to have been formed of any material admitting of a convenient or rapid execution—a mound of turf, a heap of stones. The altar consecrated by Jacob at Bethel, was merely the stone on which he rested, and that of Gideon was of a similar kind. The first altar erected by Moses was made of earth only. The altar which Moses commanded Joshua to build was of unhewn stone; Solomon's was of brass, but filled with unhewn stones; that built by Zerubabel and the Maccabees, of rough stones.

Among the seven wonders of the world, was an altar at Delos, which was made of the horns of animals; tradition reported that it was constructed by Apollo, with the horns of deer, killed in hunting by his sister Diana. Plutarch says he saw it, and that he admired the wonderful interlacing of the horns of which it was made, and that no bond or cement was used to hold it together. In the magnificent temple of Jupiter, at Babylon, there was an altar of massive gold. The altars used by the Greeks and Romans were of bronze, but the greater number of stone or marble, bricks, &c. Pausanias mentions one of wood, made so artfully as to appear to have been built of stone.

Some altars were solid, and some hollow, from the top downward, pretty low, to receive either the libation or the blood of the victims; others again were made of iron bars only, like that on the column of Antoninus.

A grand altar for the burning of the sacrifice is to be seen at the Pamphili palace, at Rome; where is remarked the fire-place, on which charcoal was put to consume the victim, and other passages, for the escape of the blood.

Altars vary almost to infinity in their forms and size, as well as in their decorations. Their shapes were innumerable: cubes, parallelograms, frustra of cones, of pyramids, and polygonal pyramids, and portions of cylinders, &c.

ALTHORP, OR OLDTHORP, formerly a hamlet in the county of Northampton, from which Earl Spencer derives the title of Viscount. "The domain of Althorp," says Dibdin, "has been possessed by the Spencer family upwards of three centuries; but the exact period of the erection of the house seems to be unknown. There is, however, no question of its having received its principal improvements during the time of the first earl of Sunderland, (1636—1643,) who was the son of the second Baron Spencer. The lady of this Earl (daughter of Robert Sidney, second Earl of Leicester, and better known as the Sacharissa of Waller the poet) erected and covered in the great staircase, which had been formerly an interior court-yard, in the fashion of the times. From that period to the present, both the house and park have continued to receive improvements. The family of the Spencers became possessed of the park at Althorp, about the year 1512 This originated in a license from the king to John Spencer, afterwards Sir John Spencer. At that time the park is described as containing 300 acres of land, 100 acres of wood, and 40 acres of water in 'Oldthorpe,' but this seems to have been only an extension of some property previously acquired there, for it is certain that Althorp, so called, was purchased by this Sir John Spencer as early as the year 1508." The great attraction of Althorp House is its noble library of which Dibdin says it is "the finest collection of books perhaps in Europe. It occupies a suite of rooms, four in number, and measuring in the whole about 170 feet in length. These are garnished from top to toe with the choicest copies of the choicest editions of the choicest authors in the choicest bindings."

AMBERGRIS, (*a*); a solid substance, lighter than water, softening and mouldering itself by the aid of heat; of a greyish colour, tinged with yellow and black; of a remarkable odour; permanent: and susceptible of great expansion; almost insipid. This substance is found in irregular round masses, formed in layers intermixed with nebs of the cuttle-fish and excrement of fishes. These masses usually weigh about a pound, but some say ten or twenty pounds, and some others a hundred or two hundred pounds. These are found floating on the sea, on the coast of Madagascar, Coromandel, and in the Molucca and Japan islands. A great many hypotheses have been offered on the origin of ambergris, but one opinion only deserves to be reported, and that Dr Swediaur's. This learned physician, remarking that ambergris contained the remains of fishes, and especially the bones and nebs of the cuttle-fish, which is the chief food of the cachalot, and besides, as it has been sometimes found, in pretty considerable masses, in the intestines of the cetaceæ, he thinks that ambergris is formed in their bodies, and is to be looked on as a hardened excrement, or as *bezoar* of the cachalot. MM. Pelletier and Caventon compare it to human biliary calculi, as there exists in both an unctuous matter (*ambréine*) not saponified by alkalies, and acidified by nitric acid. There is also an abundant resinous matter, similar to that of the Besides, the bile of animals, when deprived of matter, acquires in time an odour similar to that of musk or amber. Ambergris is soluble in alcohol and ether, leaving an inconsiderable black residue. The concentrated alcoholic tincture forms even in a close vessel, and, in a short time, a crystallization of *ambréine*, in the form of a cauliflower. medicinal tincture is composed of twenty-four of alcohol and one of ambergris. Ambergris much employed by apothecaries and perfumers, is said to possess great aphrodisiac properties.

AMPHITHEATRE. An edifice formed of semicircles united, in which all the spectators ranged on seats in its periphery, saw equally what was exhibiting in the area left in the thus the Romans also named them "visoria." general, amphitheatres usually consisted of a pierced in its circumference by two or more of arcades, having in the inside vaulted passages radiating from the exterior arcades toward the and transverse vaulted corridors, opening a munication to every part of the edifice. The corridors and ranges of seats forming elliptical parallel to the outer or exterior wall.

The origin of the games which were in these buildings have been traced to the cans, as well as the invention of the build-which they were exhibited. From them the Romans derived their taste for these sanguinary spectacles, and which they introduced among every people they subjected to their dominion · thus we find amphitheatres in every part of the Roman empire; but it has been remarked, that there is no example of a similar institution in nations beyond the pale of their conquests. But we certainly ought not to look for the amusements of the amphitheatre and its sanguinary games among that people, the inventors and embellishers of the arts, and the softeners of the human character. The Greeks, at once civilized and warlike, tempered the ferocity of war by the pursuits of the arts and philosophy; they granted no honours and opened no gymnasia, but for exercises calculated to soften the spirit and to form the body. As long as they remained free, sanguinary and cruel exhibitions appeared not on their stages, nor did they ever pay men to mangle each other with dexterity or to die with grace. Some authors, however, say, that such spectacles were not unknown in Ionia; Winckelmann observes, that if the fact were so, they were not of long duration. Antiochus Epiphanes, king of Syria, was the first who exhibited these ferocious sports in Greece, but he brought gladiators from Rome. These wretched victims of a ferocious enjoyment at first excited pity only and horror in the minds of the Greeks; in process of time their sensibility became weakened, and usage at last rendered these horrid spectacles familiar.

The first mention of the combats of wild beasts in Roman history is about the year of Rome 568; and twenty years afterwards, Livy says, the shows were celebrated with no small pomp, sixty-three panthers, forty bears, besides elephants, were exhibited: from this time they gradually increased. Marcus Scaurus exhibited one hundred and fifty tigers. Pompey exhibited four hundred and ten tigers and five hundred lions, besides elephants. Cæsar, after the civil war, exhibited a still greater number, besides twenty elephants, and five hundred gladiators on foot, and three hundred on horseback. These games being advanced to such a pitch of magnificence, a new kind of edifice became necessary, in which they could be celebrated with more convenience and pleasure. In Cicero's time they were performed either in the theatre or circus. The circus, however, was objectionable on many occasions, besides its danger. At Pompey's games the people were in danger from the elephants, and Cæsar, to avoid the same accident, had trenches dug round the arena.

Augustus being a great admirer of public shows, particularly of the combats of wild beasts, (in one of his exhibitions three thousand five hundred of the animals were killed,) had a design to build an amphitheatre entirely of stone, but it was never carried into execution. However, in his time, Statilius Taurus undertook the affair, thinking that it might be agreeable to the emperor: and he erected, at his own charge, a hunting theatre of stone in the Campus Martius, and dedicated it by the combats of armed men; this, which appears to have been comparatively, of insignificant dimensions, was destroyed by fire in the reign of Nero. From its small dimensions the public shows were still exhibited in wooden amphitheatres. Caligula began another amphitheatre, but did not finish it. Nero built a new amphitheatre of wood in the Campus Martius, and finished it within the year: it was well founded, of great size, and firmly supported by large beams. Pliny (lib. xiv. c. 39.) says it had a beam of the larix tree, 120 feet long and 2 broad, which was carried from Rhætia by Tiberius's order, when that great emperor caused the bridge at the Naumachia to be rebuilt, and by him shown for a wonder, and preserved long after as a rarity. After the example of Rome, many other cities erected amphitheatres.

AMYGDALINE, the peculiar principle of bitter almonds, to which they are indebted for the difference of properties between them and sweet almonds. It is extracted from bitter almonds by means of alcohol, from its solution in which it crystalises in white mother-of-pearl like plates. This body consists of oxygen, hydrogen, carbon and azote. Amygdaline dissolves in water unaltered, but this solution suffers a most remarkable change when it is brought with the white emulsion of the almond. Prussic acid and the oil known as volatile oil of bitter almonds, are the results. The fact that bitter almonds distilled with water yields these two substances, has long been known, but the true nature of the reaction that here takes place, has only been lately cleared up by Wöhler and Liebig. It has been shown that neither prussic acid nor volatile oil of bitter almonds, exist ready formed in the almond; but that they are the products of the reaction of the amygdaline in the emulsion which is formed when water is added; amygdaline is contained in very small proportions in bitter almonds, on an average one ounce is obtained from four pounds. A formula for Prussic acid has been prepared for medical use from amygdaline.

ANAGRAMS, (*a*) are now hardly known as efforts of wit, but in ancient times they formed the subject of learned disquisition, and were ranked among the cabalistic sciences. The paltry process of anagramatising sentences and proper names was also extremely fashionable in the sixteenth and seventeenth centuries, occupying that place now enjoyed by conundrums, and other small means of amusement among the idle. The French are reputed to have been exceedingly fond of anagrams. On one occasion an anagram was made on the mistress of Charles IX., which threw the nation into an ecstacy of delight. The name of the lady was *Marie Touchet*, the letters of which words were transformed into *Je charme tout* (or, *I charm all*)—an anagram said to be historically just. But this anagram was perhaps surpassed by the following: The assassin of Henry III. was *Frere Jaçques Clement*, and it was soon discovered that the letters of these three words could form the appalling sentence, *C'est l'enfer qui m'a creé* (or, *It is hell which created me.*)

Various anagrams were appropriately formed on the name and titles of our own King James VI., one of which was, *James Stuart—a just master*. One on the same monarch, but referring to his complete name, was, *Charles James Steuart—claims Arthur's Seat*. Of the poet *Waller* it was said—

> His brows need not with laurel to be bound,
> Since in his *name* with *Laurel* he is crowned.

And *Randle Holmes*, a person who wrote a book on heraldry, was complimented by the expressive anagram, *Lo Men's Herald!* Perhaps the happiest of all anagrams, says D'Israeli, "was produced on a singular person and occasion. Lady Eleanor Davies, the wife of the celebrated Sir John Davies, the poet, was a very extraordinary character: she was the Cassandra of her age; and several of her productions warranted her to conceive she was a prophetess. As her prophecies in the troubled times of Charles I. were usually against the government, she was at length brought by them into the court of high commission. The prophetess was not a little mad, and fancied the spirit of Daniel was in her, from an anagram she had formed of her name, *Eleanor Davies*—to *Reveal O Daniel*. The anagram had too much by an *l*, and too little by an *s*; yet *Daniel*, and *Reveal* were in it, and that was sufficient to satisfy her inspirations. The court attempted to dispossess the spirit from the lady, while the bishops were in vain reasoning the point with her out of the scriptures, to no purpose, she poising text against text. One of the deans of the Arches, says Heylin, took up a pen, and at last hit upon this excellent anagram: *Dame Eleanor Davies*—*Never so mad a ladie!* The happy fancy put the solemn court into laughter, and Cassandra into the utmost dejection of spirit. Foiled by her own weapons, her spirit suddenly forsook her; and either she never afterwards ventured on prophesying, or the anagram perpetually reminded her hearers of her state. No more was heard of the prophetess."

ANALYSIS, Chemical, OF INORGANIC BODIES. The aim of an inorganic analysis is to determine the constituents of an inorganic substance, and their proportions by weight. This department of chemistry has made great and rapid progress within the last few years, and analysis has now become an art within the compass of fixed rules. Inorganic analysis is of two kinds—qualitative and quantitative; the former should always precede the latter. Attention must first be given to the physical properties of the substance; it may be volatile, or combustible, capable of being sublimed, or it may be decomposed by heat. In order to separate the constituents of a body, it must in general be dissolved. For this purpose, pulverisation must frequently be first had recourse to; the effect of water is tried, and then of the mineral acids, if it prove insoluble or only partially soluble in water. The absence or presence of a particular body in this solution is found by the bringing small portions of it in contact with known compounds called reagents. From the appearances that present themselves, the operator is enabled to determine whether this or that substance be present in the substance tested. A practical acquaintance with the use of reagents, is absolutely necessary for the performance of every analysis. The changes produced by reagents are frequently escape of a gas, a precipitate, change of colour, &c. The more usual reagents are sulphuretted hydrogen, potash, ammonia, sulphuric and muriatic acids, ferro-prussiate of potash, &c. Many cases present themselves, particularly of siliceous minerals, which do not dissolve in the mineral acids, and which, to be analysed, must be brought into solution, by being previously fused with carbonate of potash; the constituents of the mineral are now found soluble in muriatic acid, with the exception of the silica, which remains in the form of a jelly. The reagents are applied to the solution, separated from the silica, in the same way as to solutions of substances in muriatic acid, which have not been previously fused with potash.

Having determined what are the ingredients of a substance, the next step is to determine the relative proportions of each. This is done by obtaining each of the substances, separated into compounds of known composition; not, or but seldom, by obtaining the substances themselves pure and uncombined with any other. Thus it is now usual to determine the proportion of sulphur in a compound, by converting it first into sulphuric acid, and then into sulphate of barytes, than by obtaining the sulphur in the simple form. The composition of sulphate of barytes is well known, the per centage of sulphur it contains has been rigidly ascertained, and it is therefore now become a mere matter of convenience to extract the sulphur in the simple form, or to obtain it in a known compound. In the same way the ores of iron are analysed, by obtaining the peroxide of iron they contain, and from thence calculating the amount of iron, and so on, of hundreds of minerals and other substances. As according to the theory of definite proportions (see *Atomic Theory*), every chemical compound contains always the same proportions of its ingredients, it is frequently sufficient to ascertain, by experiment, the amount of one of the ingredients of a substance, to be enabled to calculate precisely the amount of another ingredient. Thus, one way of analysing limestone is to measure or weigh the carbonic acid it contains, and thence to calculate the amount of lime in the mineral. When a substance contains many ingredients, its analysis is often troublesome in the extreme, and demands for its execution a stock of untiring perseverance, and the greatest accuracy. The reagents in such cases must be applied in a certain order; thus, to choose a very simple instance, the mineral garnet contains silica, alumina, lime, and oxide of iron. The mineral must be dissolved in muriatic acid, evaporated to dryness, and the silica thrown on a filter; the solution contains lime, alumina, and oxide of iron; to this solution caustic ammonia is added, which throws down the two last, but retains the first in solution; the precipitate is collected on a filter, and the lime which comes through is precipitated by oxalate of ammonia; the resulting oxalate of lime being dried and calcined, gives carbonate of lime, a compound of lime of well known composition. To return to the alumina and oxide of iron which we left precipitated on the filter, these must be redissolved in muriatic acid, and reprecipitated, and boiled with caustic potash. The alumina dissolves entirely, and leaves the oxide of iron pure.

The analysis of mineral waters is a very important branch of inorganic analysis. The substances dissolved in water may be gases or solids. Many springs contain large quantities of carbonic acid dissolved in water; its amount is known by bringing a known bulk of it in contact with an ammoniacal solution of chloride of calcium; the carbonate of lime which precipitates, being collected and weighed, affords a correct indication of the quantity of carbonic acid contained in the water. The solid contents of a water are ascertained by evaporating to dryness a known quantity of water; and treating the salts obtained like any other inorganic compound. The presence of iron is best ascertained by immersing in the water a bit of gall-nut; if this, after the lapse of half an hour or so, strike a black colour, the water contains iron. Common salt is tested by the amount of precipitate afforded by nitrate of silver.

ANALYSIS, Chemical, OF ORGANIC BODIES. Organic bodies generally contain only three or four constituents; these are carbon, oxygen, hydrogen and nitrogen. Nitrogen is contained in a comparatively small number of vegetable substances, but is most usually, though by no means always, in found in animal substances. The object of organic analysis is to determine the nature and relative proportions of these constituents. A knowledge of the composition of vegetable and animal products is absolutely essential to the progress of every investigation; it forms indeed the only true basis of a scientific research into their nature. Innumerable as are the organic compounds, and few as their ultimate elements have been above stated to be, yet correct analyses have shown but few compounds that possess exactly the same elements in the same proportions. The method followed in earlier times, for analysing organic compounds, was extremely imperfect, and does not resemble in the least that now followed. The present plan has reached a very high degree of perfection, and almost entirely by the instrumentality of chemists still alive—Gay Lussac, Berzelius, and Liebig.

The simplest mode of analysing organic compounds would appear, at first sight, to be that of obtaining the elements separate and pure; but such a plan is impossible, or at least, has never yet been practised. Nor is it at all necessary, for sufficient accuracy is attained when we separate the elements into known compounds. Nitrogen alone is obtained in the simple uncombined form, and indeed is always so estimated; but carbon, oxygen and hydrogen, are never, in organic analysis, obtained pure, but are estimated in the case of carbon, as carbonic acid, and in that of the other two elements as water. It will be obvious, that from the composition of carbonic acid being already established, the quantity of carbon can be correctly determined when the amount of carbonic acid is given; and in like manner, from the known composition of water, the proportions of hydrogen and oxygen may be calculated with the greatest accuracy.

The means, then, employed to arrive at a perfect knowledge of the composition of an organic compound, is by converting a known weight of it, into carbonic acid and water. When the substance contains nitrogen likewise, this body is collected generally in a separate process in the simple form. Perfectly to effect this conversion, and conveniently to estimate the quantities of the products, is the intention of the modes of organic analysis as now practised; this end is attained by mixing the body to be analysed with another highly oxygenated substance, which will readily part with its oxygen at a high temperature; for this purpose chlorate of [illegible], oxide of copper, and chromate of lead have [illegible] employed. The most usual, and for general ana[illegible], the best, is the black oxide of copper, obtained [illegible] exposing the nitrate of copper to redness. This substance has the valuable property of resisting any [illegible] of heat by itself, and yet of yielding up [illegible] readily to organic substances at a moderate [illegible]. It becomes reduced thereby to metallic cop[illegible]. The carbonic acid gas and water which re[illegible] this oxidation, escape from the heated [illegible] of substance and oxide of copper, and are [illegible] in apparatus shortly to be described, for [illegible] their quantity. The water is con[illegible] by means of a substance to which it is [illegible] have an immense affinity, namely, chloride of [illegible], and the carbonic acid is absorbed by [illegible] potash. The increase of weight on the part of the chloride of calcium, affords the data for [illegible] the proportion of hydrogen in the com[illegible]; for water contains exactly ⅑ of its weight of hydrogen. There are two ways of estimating the quantity of carbonic acid; by collecting the whole gases given off during the operation over mercury, and then condensing the carbonic acid by means of caustic potash, and judging of its quantity from the amount of condensation. The process takes place, of course, in graduated vessels. But the newer, and the better way of estimating the carbonic acid, is by forcing the gases evolved to bubble through a solution of caustic potash, and the amount of carbonic acid is determined by the increase in weight which this solution has attained. Carbonic acid contains 27·64. p. c. of carbon. By these means, then, the content of the substance in carbon and hydrogen has been determined, and if there be no other constituent, it is obvious that the two quantities thus obtained, must together give a sum equal to the quantity consumed in the analysis. Many oils and other bodies contain besides carbon and hydrogen no other constituent. If the substance analysed contained besides those only oxygen, the quantity of this element is obtained by subtracting the sum afforded, by adding together the two quantities of carbon and hydrogen, from the whole weight of substance used. Thus, if the weight used be 10 grs. and it be found, by experiment and calculation, that the carbon and hydrogen together, amount to 8 grs., the oxygen is then 2 grs. in ten, or 20 p. c. If the substance contain nitrogen, its quantity must be added to that of the carbon and hydrogen, and then the sum subtracted from the whole weight used to ascertain the amount of oxygen.

The particular mode of procedure, in analysing a substance that does not contain nitrogen, is briefly this: a quantity, varying from three to twelve grains of the substance in fine powder, and perfectly dry, is well mixed with recently ignited oxide of copper. The mixture is introduced into a tube about 12 inches long, and ½ an inch wide. This tube must be of good potash glass, which does not fuse readily. It is sealed at one end, at the other it is stopped with a sound dry cork, into which passes a narrow tube, for conducting the evolved gases and vapours, through a bulb filled with pieces of chloride of calcium, to absorb the water. A small tube of caoutchouc connects this bulb with an apparatus destined to collect the carbonic acid. This apparatus consists of five bulbs, into which is introduced the liquid caustic potash. The construction and disposition of those parts will be easily understood.

The furnace is of malleable iron, and has slits at the bottom for allowing a supply of air; the combustible used is charcoal. The chloride of calcium and caustic potash apparatus, having been weighed before and after the combustion, the increase in weight of the different parts, afford the data for calculating the composition of the substance submitted to analysis. The above process is used for determining the carbon, hydrogen, and oxygen of all organic substances, as well of those which contain nitrogen, as of those which do not. But when nitrogen is present, another process is superadded to the above, for the purpose of obtaining the nitrogen in a state of purity. There are two modes of doing this; they resemble each other in the substance being mixed and burned with oxide of copper, as has been before described, but differ in the modes pursued for determining the nitrogen. One consists in obtaining the gas pure by exhausting the apparatus of air, and causing the mixed carbonic acid and nitrogen gases to pass through caustic potash, when the latter alone passes into a bell jar, where its amount is determined; some dispense with the exhaustion of the air, and receive the nitrogen in a bell jar containing some air, which stands inverted over mercury. The addition of gas in this bell jar after the combustion, indicates the proportion of nitrogen in the compound. The other mode consists in collecting the mixed carbonic acid and nitrogen gases, in several narrow graduated tubes, and successively examining those for their relative proportion of the two gases. This is done by adding to each of them a little caustic potash, which absorbs the carbonic acid and leaves the nitrogen. The amount of carbon in the compound having been ascertained by a previous experiment, with the apparatus for this purpose before described, and the relative proportions of the carbonic acid and nitrogen being afforded by the present experiment, we have here all the data necessary for calculating the composition of the substance that has been submitted to analysis.

It has been with the help of the modes of analysis now described, that organic chemistry has made in the last ten years such immense progress. Without a correct and speedily-executed process for analysing the different substances as they occur in investigations in organic chemistry, it has been impossible to explore the vegetable and animal kingdoms in their chemical relations, as had been done, and is still doing. The present mode of analysis is all but perfect. It is in good hands; so accurate as in this respect to rival, indeed to surpass, the analytical processes of inorganic chemistry; and an analysis may often be commenced and ended within three hours.

ANATOMY, (*a*.) like every other branch of useful knowledge, has of late become a study of more general interest, and is not now confined, as formerly, to scientific and professional men. The numerous treatises that have been published on Natural Theology, Phrenology, Physiology, and Natural History, especially on the Physical History of man, and on Animal Mechanics, in conjunction with popular lectures on the structure and functions of animal life, have all contributed to awaken a laudable curiosity among almost every class of society, to become more thoroughly acquainted with the structure and composition of living animal bodies, and especially of the structure of the human body, and of those laws by which the animal economy is governed and directed in its progress from its conception to its birth, and from its birth till its death, or dissolution, as a living and animated being. From the short space, therefore, which was allotted to Anatomy in the body of the work, it is now certainly due to the spirit of the age, that we should present to the general reader a condensed, yet more extended, view of the present state of our knowledge of Human Anatomy.

A catalogue of the bones of the skeleton in their relative positions, with a plate presenting an anterior and posterior view of the hard parts, or pillars, of the human frame, accompanies the short history of the science to which we have alluded. The outer layer of muscles, or those brought into view when the body is stripped of its external envelopes, have likewise been enumerated, which if attentively examined and studied, in connection with the following sketch, and those other anatomical and physiological articles which have already found a place in the body of the work, and others to be met with in this Supplement, will, we have no doubt, tend to enhance the value of this publication, and furnish many an inquirer with a mass of anatomical and even physiological facts, which are seldom to be met with in works of this description.

The late revered Mr John Bell well observes, that it is a matter of little consequence at what point of the human body the anatomist begins to unfold its structure, so that he performs the circuit, and circumnavigates the whole. It has been common, however, to begin with osteology, or, in other words, the anatomy of the bones, then proceed to myology, or a description of the muscles. We should be at no difficulty to find arguments in favour of pursuing a different course; but as we are by no means partial to innovations, we shall follow the arrangement of that distinguished anatomist, Bichat, and observe the following order, as the most simple analysis, or division of the body into its elementary parts, and the knowledge and adoption of which has been of the utmost importance, not only in the investigation and treatment of diseases, but has proved of the greatest convenience in anatomical arrangement. The principles upon which this order is founded, rests on the fact that the different organs which constitute the body, are of a more simple or complex structure, as they are made up of one or more *tissues* or textures, which are the original [illegible] performing the same function, in whatever part of the body they exist. Even the solid parts of the fabric, when minutely examined, are found to consist ultimately of layers of minute fibres or filaments, varied in appearance and texture, according to the use and offices of the part they compose. It is likewise known that most of the organs of the body are composed of a variety of these elementary textures, and are spread out in the form of membranes, collected into cords or hollowed out into canals, and by their diversity of combination, figure and colour, they produce all the modifications of structure and functions which different organs possess. In adopting these views, we shall consider the systems of tissues or textures in the following order. 1. The bony system, including the medullary. 2. The cartilaginous, including the fibro-cartilaginous. 3. The fibrous. 4. The muscular. 5. The vascular, divided into the arterial, venous, lymphatic, &c. 6. The nervous. 7. The mucous. 8. The serous. 9. The glandular. 10. Adipose. 11. The cellular. 12. The dermoid: Which twelve divisions will comprehend a general view of the whole animal structures.

As already stated, an enumeration of the bones with their names, will be found under the article on anatomy, in the body of the work: we shall therefore, under this head, confine our attention to the General *Anatomy of Bone, or Osseous Substance*, which in the human body resembles the corresponding texture in the bodies of quadrupeds. The fabric of the *skeleton* alone, of which almost every person has a general notion, is sufficient to show the great variety of forms under which it exists (See Anatomy, Plate III. vol. I). In some parts innumerable fibres or plates of it may be found nearly as fine as a hair, in others it occurs in solid pieces, fully half an inch thick. Its structure is exceedingly simple. If we divide it, and examine its surfaces with a common magnifying glass, or cut off slender films of it, and inspect them with a powerful microscope, it will appear to be a form substance without fibres, plates, or cells, penetrated every where by delicate blood vessels. Those vessels admit of being injected with size, or turpentine and vermillion, pretty freely; but from the opacity and hardness of the texture in its natural state, it is impossible to trace them with the eye, or by dissection, into its more interior parts. There is a very simple method, however, by which a piece of bone, after it has been minutely injected, may be rendered almost perfectly transparent, and then its blood vessels are displayed in the most beautiful manner. The method consists in steeping the piece of bone in dilute muriatic acid for a few hours, or days, or weeks, according to the thickness of the specimen, until it has become quite soft and pliable. It is then to be well washed, and after it has been gradually, but incompletely dried, it is to be plunged into spirit of turpentine. The instant it is immersed in this fluid, it becomes transparent, but the substance injected into the arteries retaining its colour and opacity, the most minute ramifications of these vessels are distinctly seen. There can be no doubt, that bone is also possessed of absorbents and nerves, but these have not yet been traced in it.

Any individual of ordinary intelligence and address, may, by the above and other more simple processes, satisfy themselves on many important facts in osteology. If, for example, we wish to demonstrate the substance of bone, which has been divided into three heads: *compact*, as in the bodies of the long bones, *spongy*, as in the extremity of the long bones, and reticular, called also the *cancelli*, as in the cavity of bones, which have marrow or medullary substance, we may proceed as follows:

Let a thigh bone be well boiled or macerated, and then let a perpendicular section be made, in other words, let the bone be sawn in two, and the three substances of bones will be very strikingly exhibited; the *compact* will be seen forming its external part, the spongy at the extremities, crowded with small cells, or as they are called by anatomists, *cancelli*, and the *reticulated* in its cavity, which forms a reservoir for the marrow. The compact substance is composed of many laminæ, or plates, composing a firm, hard substance, and these laminæ are easily distinguished in bones that have been partly exposed to calcination, or boiled for any length of time in a strong alkaline ley, or steeped in dilute muriatic acid. In man, and in other animals, these laminæ mostly separate on exposure to air, and hence the laminated portions, which frequently peel off, are called exfoliation in surgery. The fibres of the spongy and reticulated substance are extremely varied in their direction, and some variety occurs in this respect in the compact substance. Thus, in flat bones, as those of the head, they are disposed in the form of rays, and are seen converging from the circumference to the centre, while in the cylindrical bones they seem to be placed in parallel directions. The direction of the bony fibres, and all the above circumstances, are most satisfactorily demonstrated: 1. In the parietal bones of a fœtus which have been macerated, and cleared of the soft parts, as they exhibit very beautifully the radiated direction of the bony fibres: 2. By macerating a portion of the adult femur or thigh-bone from the body of the bone in dilute and muriatic acid, then separating with forceps or pincers, the laminæ: this simple manipulation will distinctly exhibit the laminæ of the bones; and, 3. The os femoris, or thigh bone of a slink calf, or a pig, if macerated, or boiled, and either kept in spirit, or dried, and then put in spirit of turpentine, will show the parallel direction of the bony fibres.

It is a remarkable fact, that the sulphuric, nitric, muriatic, and acetic acids, when properly diluted, all soften bone, and render it pliable, without its being possible to discover, by the most minute inspection, that a single particle of its substance has been removed. We have repeated this experiment many times, and on some of the most delicate portions of osseous substance in the body. The form and size of the slenderest fibre remains unaltered by the process, but our experience has convinced us that the muriatic acid is best adapted for the purpose. In proportion as the piece of bone becomes soft by this operation, it loses its yellow colour, and becomes bluish, or gray, approaching somewhat in appearance to cartilage. The very opposite effects are produced on osseous substances by heat. If a bit of bone be burned in a charcoal fire, of which the heat has been gradually raised to whiteness, and it be then carefully removed, and cooled very slowly, it will be found to have become exceedingly brittle, and of a pure white colour. Still not a particle of the substance will appear to have been destroyed. If the process have been carefully conducted, the bone will have precisely the same shape and dimensions as before.

Having thus shortly sketched the general structure and texture of bones, we shall briefly describe some of the other most prominent peculiarities of the osseous system. Bones, in respect to *form or figure*, have been divided into broad or flat, long and round, and cylindrical, and long, and irregular shaped bones; have been subdivided into a body, and extremities, and flat bones into body and margins. The long bones in general, belong to the parts of locomotion, where they become levers, moved in various directions by the muscles. The broad or flat bones are little connected with locomotion, serving chiefly for the insertion of muscles, which proceed to the long bones; the broad bones also form cavities, such as those of the skull and pelvis. There is another class of bones which, by some anatomists, have been denominated the short bones: these are situated in those parts in which solidity and motion must be united, as in the spine, the wrist, and the instep, where their number insures these two properties, namely, solidity and motion, because the force of external mechanical shocks expended on the wide surface by which they are connected, and because by their individual partial motions there results collectively a very extensive general one.

Bones, too, have been variously *named*, some from their situation, as the frontal, parietal, occipital, nasal, molar, &c., others from their figure, as the ethmoid bone, clavicle, naviculare, tibia, &c., and some from their use, as the sphenoid bone, the maxillary bone, the femur, &c. The *processes* and *cavities* are named from their figure, as the acetabulum, or cup-shaped cavity in the hip-bone, into which the head of the thigh bone is lodged, because this cavity bears a resemblance to the vinegar cup of the ancients; and from similar circumstances of resemblance to different objects, have many of the other processes and cavities of the body received their names; others again from their use, as the trochanters of the thigh bone, that large and smaller process at the bend of the head of the bone which serves for the attachment of the capsular ligament, and the tendons of muscles, connected with the motion of the joint; and other processes from their *situation*, as the nasal palatine, and orbital processes. By bearing those explanations in mind, the student of anatomy will have less difficulty in comprehending the precise meaning of anatomical details, which, with all possible simplicity of language, is yet too frequently little better than unintelligible jargon, decked out in technical phraseology. If a process be large and of a spherical shape, such as the upper end of the thigh bone, or bone of the arm, it is termed sometimes the caput or head; if, on the contrary, the head or end of the bone is flattened, it takes the name of a condyle. Other processes are termed mastoid, or mamillary, from their resemblance to a nipple styloid; and coracoid, from their similitude to a stiletto, or the beak of a crow; some spinous, which appear like thorns; while others derive their names from their direction, as the longitudinal, perpendicular, horizontal, oblique, or transverse processes. A variety of *eminences* and *depressions*, to some of which we have now alluded, termed processes, spines, condyles, &c. characterise a number of the bones. There is one kind of eminence peculiar to bones, which deserves particular notice, which is called an *epiphysis*, and which should be distinguished from an apophysis. The latter is nothing more than a process, or head of a bone, but an epiphysis is a part of a bone connected to that bone, by an intervening cartilage, and of this, a beautiful demonstration may be seen every day in the thigh bone of a calf, or young pig, in which, when boiled, the epiphysis or head of the bone may be easily removed, and the part which adhered to the body of the bone will be found lined with cartilage; and thus the condyles of the thigh bone of a child are epiphysis, and are separable from the femur. In the course of time, however, the intervening cartilage assumes a bony character, a firm union takes place, and the epiphyses of the child become apophyses in the adult. Many other very interesting facts in osteology, may be learned from an attentive inspection of the bones of the inferior animals, a knowledge of which will amply repay the inquisitive for the time they may bestow on the subject. The eminences and depressions are observed to be most strongly marked, in those persons who take any active exercise, and in the male more than the female, and in the adult more than in the child. The eminences of articulation are generally the expanded extremities of bones, forming surfaces of union with other bones, in which there are corresponding depressions; but these will come to be noticed more particularly, when treating of the *joints*. Eminences and depressions, from apparent impression, are such as the irregularities of the inner surface of the skull, or such as muscular impressions on other bones present. They are supposed to be occasioned by the pressure of different organs on the surface in their growth or actions. If those are not actually the result of the compression of the organs on these bones, they show that the bones are provided with forms admirably accommodated to the adjacent parts. There are almost innumerable cavities on the exterior of bones, which are intended for the insertion of muscles, tendons, or ligaments, such irregularity of surface extending the fibrous attachment without increasing the diameter of the bone. There are other cavities which are destined to receive an organ and protect it, while there is a third class, for affording a gliding passage for tendons, and for the transmission of vessels and nerves, and for the two last, there are a multiplicity appearing, like small perforations in the bones in general, and in the extremities of the long bones in particular; a fact that will be more particularly noticed in a subsequent section.

It is scarcely possible to perceive any difference in the *osseous substance* of the *female* and that of the *male*.

In the fœtus and infant, the colour of bone is much redder than in the adult, and it becomes gradually paler as the individual approaches to maturity, and in the decline of life generally acquires a deeper tint of yellow. In point of consistence, it will be found to be softer, and more elastic, the younger; and harder, and more brittle the older. Its specific gravity, too, almost invariably increases with the age of the individual. The vascularity of bone is much greater in early life than at maturity, and much less in old age, and to this, no doubt, in part the difference of its colour is owing.

With respect to the composition of bone, there is no texture of the body of which the chemical properties have been more frequently or more minutely investigated. The specific gravity of bones differs in different parts; that of adults' teeth is, according to Dr T. Thomson, 2·2727, that of children's teeth 2·0833. Bone, however, consists essentially of only two different substances, namely, a cartilaginous and earthy. Berzelius found the constitutents of human bone to be as follows—

	Man.	Ox.
Cartilage - - - - - -	33 30	[illegible]
Soda, and common salt - - - -	1·20	[illegible]
Carbonate of lime - - - - -	11 30	[illegible]
Phosphate of lime - - - -	51 04	[illegible]
Fluate of lime - - - - -	2 00	[illegible]
Phosphate of magnesia - - - -	1·16	[illegible]
	100·00	[illegible]

From these analyses, it appears that there is nearly the same proportion of cartilaginous substance in ox as in human bones, and almost the same proportion of the other principal constituent, the phosphate of lime, while the difference in the other constituents is more remarkable. In such diseases as caries of the bones, the phosphate of lime seems to be diminished, as appears from the analysis of a carious bone by Lassaigue.

Animal matter - - - - - -	[illegible]
Carbonate of lime - - - - - -	[illegible]
Phosphate of lime - - - - -	[illegible]
	[illegible]

The bony part of the teeth, according to Berzelius, differs considerably in the proportion of its constituents from that of the other bones.

Phosphate of lime - - - - -	[illegible]
Fluate of lime - - - - -	2 10
Carbonate of lime - - - - -	[illegible]
Phosphate of magnesia - - - -	[illegible]
Soda, with a little muriate of soda - -	[illegible]
Gelatine water, &c. - - - -	[illegible]
	[illegible]

With respect to chemical properties, it is sufficient to remark, that the quantity of [illegible] matter contained in bone, proportionally to the cartilaginous part, is always greater the older the subject. This accounts for the difference in its specific gravity, hardness, and strength, at different periods of life, and in part also for the [illegible] of its colour, facts which should ever be remembered by the practical surgeon in his treatment of fractures. As our general anatomy of the bony system would appear imperfect without noticing those useful, but often ill-treated servants, the *teeth*, we refer to the article *Teeth*, in the *Encyclopedia*, for a description of the most prominent and peculiar characteristics of their organization, arrangement, and forms.

Having now completed our short, but we flatter ourselves comprehensive, sketch of the *general anatomy of the bony or osseous* system, we shall next attempt a brief topographical description of the human skeleton, referring to *Anatomy, Plate III. in the first volume of the Encyclopedia*, for a more correct representation of the relative connections, shape, and size, of such bones as are brought fully into view in the anterior and posterior aspects in which the skeleton is figured in the plate.

Anatomists have been accustomed to divide the skeleton into the head, trunk, and extremities, and the extremities have been again subdivided into the upper and lower. Before, however, entering into particular details, it is necessary to observe, that all the descriptions in this article are to be considered as applicable to the *adult male*, unless when the contrary is expressly specified.

To regulate the interpretation of the terms *anterior*, *posterior*, *lateral*, *above*, *below*, *before*, *behind*, &c. we shall uniformly suppose the body to be in the erect posture, with the arms hanging parallel to the trunk, and the palms of the hands and toes turned directly forwards. This is the simple remedy, and the only effectual one, for the trifling ambiguity which might otherwise attend the use of these terms. For example: by *superior* and *inferior* is signified higher and lower, with respect to the erect position. By *anterior* and *posterior* is denoted the situation of the parts, as nearer to the surface or hinder surface of the body, and by *laterally* is to be understood that the parts so described approach the one side or the other. *Inner*, and *outer*, and *external*, and *internal*, express the situation of any given part or portion of the body, or of an imaginary plane bisecting the body into lateral halves, passing through the head and trunk, and continued between the lower extremities.

The *Head*. The united assemblage of bones which compose the head are called the *skull*, which comprehends the bones of the cranium and face, twenty-two in number, in which enumeration the teeth are not included. Some of the bones are in pairs, and others are only single bones. The *adult cranium*, strictly so called, only consists of eight bones. These are the os frontis, or frontal bone, (Plate III. fig. 1. No. 1.) which forms the forehead, part of the temples, and the roof of the orbits, and its shape has been compared to a cockle or clam shell.

The os frontis is very smooth, and convex externally where it forms the forehead, but below, where it assists in forming the orbit, it affords several processes and cavities. Its inner surface is concave, and is turned towards the brain, and in the centre of its inferior part is the ethmoid bone, which is placed at the top of the cavity of the nostrils. It sometimes consists of two portions, in consequence of the saggital suture being continued down through its middle, to the nose. This, however, is more frequent in females than in males.

There are several well marked *processes*, or *eminences*, both external and internal, the most important of which are the two *frontal eminences*, which mark the centre of ossification; two *frontal tuberosities*, situated over the frontal sinuses, and two superciliary ridges, or arches, which give origin to the frontal muscles, and whose extremities are called the angular or orbitar processes, and behind such external angular processes the surface of the bone is considerably depressed for the situation of a part of the temporal muscle. There is, likewise, an *external frontal spine*, upon which the ossa nasi rest, an internal frontal spine, to which the dura mater adheres, and two orbitar plates which separate the orbits from the cavity of the cranium.

This bone, which constitutes the forehead, the pituitary, or frontal sinuses part of the orbit, and contains and defends the anterior lobe of the brain, is *joined or connected*, above or behind, with the ossa parietalia, which junction terminates at a line running horizontally backwards, from the point of the angular process, between these two points, and behind as far as the ethmoid notch; it joins with the sphenoid bone on each side within the ethmoid notch; it receives the ethmoid bone, which joins to the orbitar plates, at the inferior part of which it unites with the ossa lachrymalia; in front it joins its nasal process and spine with the ossa nasi and ethmoid bone, and with its outer angular processes with the malar bones.

In this bone there are several well defined hollows, or cavities, and holes, or foramina, which all serve either to lodge important organs, or afford a passage for blood vessels, nerves, &c.

One of the most interesting of these are the frontal or pituitary sinuses, or cavities, within the bone above the root of the nose; they are separated by a thin bony partition, and open, by two small holes, into the nostrils, of which they form a part, and their internal lining is frequently thickened and inflamed in cases of common cold, along with the internal lining of the nasal cavity, and produces that stuffing and dryness of the parts which is so very disagreeable, a symptom when suffering from the effects of cold. It is indispensibly necessary for the surgeon to be well acquainted with these sinuses, and with others not less important in this bone, especially that of the dura mater, as they should be cautiously avoided when performing the operation of trepanning. Substances have been forced immediately over the internal angle of the orbit, some way into the skull, and never produced any symptoms common to injuries of the brain, and when removed it has been ascertained that these substances were in the *frontal sinuses*.

There are three pairs of muscles attached to the os frontis, viz. the *temporal*, *corrugator supercilii*, and *orbicularis palpebrarum;* it is also covered by the *occipito frontalis*. In the new born infant, the os frontis consists of two portions. The superciliary arches and orbitar plates are distinctly formed, and sometimes the frontal sinuses.

Ossa parietalia, or parietal bones, (Plate III. fig. 2. No. 1.) This pair of bones forms the sides and vertex, or top of the head, and are joined by their frontal edge to the os frontis, by the parietal edge to its fellow, by its occipital edge to the os occipitis, and by the tempero sphenoidal edge to the temporal and sphenoid bones. The parietal bones form the superior part of the cranium, and have several *eminen-*

ces and *cavities*, having a considerably convex and somewhat quadrangular shape. There is a semi-circular ridge, from which the temporal muscle originates, and the foramen parietale, which is near the sagittal suture, and transmits an artery and a vein to the dura mater. Upon its internal surface are the grooves of the spinous artery, and when the two bones are united, there is a deep cavity extending along the sagittal suture, for the longitudinal sinus of the dura mater. The connexion of these bones with the os frontis, claims more particular notice than it often receives. In the middle of the coronal suture, where the frontal bone, from its size and flatness, stands most in danger of being injured, it rests upon the arch formed by the parietal bones, whereas, at the sides, the parietal bones rest upon the os frontis, because the same arch is there in the greatest danger from pressure. The surgical anatomy of the parietal bones is very essential, especially a correct knowledge of the situation of the parietal foramen, for when the artery which passes through it is divided, it sometimes bleeds very profusely, and being embedded, and somewhat retracted on the foramen, cannot be secured by a ligature. These bones, at birth, consist of one portion, and partake of the shape of the adult bone, affording a very beautiful exhibition of the radiated bony fibres, and the centre of ossification.

One muscle only, viz., the *temporal*, is attached to the parietal bone.

The *os occipitis*, or occipital bone, (Plate III. fig. 2. No. 4.) is situated at the back of the head, forming part of the base of the skull, and is somewhat of a quadrate oblong shape. Its external surface is convex, and very irregular, serving for the attachment of various muscles. The inferior portion is stretched forwards like a wedge, and at the base of this projecting portion are two condyles, or rounded eminences, which serve for the articulation of the head with the first vertebra of the neck. There are numerous *processes* on its external surface, and one upon the internal surface—an *internal crucial spine*, the superior branch of which gives adhesion to the longitudinal sinus of the dura mater, the two lateral to the lateral sinuses, and the inferior to the septum ceribelli.

There are likewise several *cavities* and *depressions*, but the most remarkable circumstance connected with this bone, which deserves special notice, is the great opening or hole, technically the *foramen magnum occipitale*, through which the spinal marrow proceeds into the spine and the vertebral arteries and accessory spinal nerves into the cranium. There are also two anterior condyloid foramina, or openings for the passage of the lingual pair of nerves, two posterior foramina of the same kind for the passage of the occipital vein into the lateral sinus (which are sometimes wanting.) There are two *notches*, which with two corresponding notches of the temporal bone, form another foramen in the base of the cranium, for the passage of the blood from the lateral sinuses into the jugular vein, and the exit of the *parvagum* or eight pair of nerves; and a considerable *groove* leads to the above notches in which the lateral sinuses are situated. The internal surface has also four considerable *depressions*, formed by the *crucial spine* we have noticed, and the two superior contain the posterior lobes of the brain; and the two inferior, the two lobes of the cerebellum.

“Man being designed (as Dr Hooper pertinently remarks) for an erect posture, the foramen magnum occipitale (or *great opening* we have already alluded to,) is placed nearly in the basis of the human cranium, at almost an equal distance from the posterior part of the occiput and the anterior part of the lower jaw, whereas in quadrupeds it is nearer the back part of the occiput.” This extraordinary bone is connected with the sphenoid bone, the two parietal and two temporal bones; and with the first vertebræ of the neck by ginglymus, or a hinge-like articulation: and to the second by syndesmosis, or by means of ligaments.

We have been more full and particular in our description of this bone than perhaps our bounds justify, because we consider it to be one of the most wonderful among the many contrivances of the human body, in which the adaptation of means to an end are so admirably displayed, that it might form in itself subject sufficient for another Bridgewater Treatise. It not only constitutes the posterior and inferior part of the cranium, but contains the posterior lobes of the brain, the cerebellum and medulla oblongata, or upper part of the spinal cord, and has been said (and we think with some justice) to be the *sensorium commune*, the organ of all the senses: but yet, in addition to these important offices, the occipital bone also serves for the articulation of the head with the spine, forming by far the most important joint of the human body. This subject will, however, be further noticed in the section on the spine and vertebræ.

Again, if we except the petrous portion of the temporal bone, the occipital will be found much stronger than any bone of the head. The reasons for this are sufficiently obvious, even to the most thoughtless observer, as the occiput has to defend the cerebellum, the least injury of which proves fatal, and perhaps also because it is more liable to be fractured, being, from its situation, less defended than the other bones. For example, when we fall forward, the hands naturally protect us; and if on one side, the shoulders greatly defend the head but when a person falls backwards, the hind part of the head comes with considerable force against the earth; and if the fall is against a stone, or other hard substance, the bone is either fractured or knocked in, and presses upon the brain. In the course of our practice, we have known several instances of the kind. One in particular of a young man about thirty, a type-founder in Edinburgh, whose feet slipped from below him in coming out of a door, on the steps of which was some ice: in falling, his hat flew off and he fell heavily, his head striking with great violence against the stone steps. He died in about twelve hours after, and on opening the head after death, the occipital bone was found to have been beaten in. Its union with the parietal and temporal bones, by the lambdoidal suture, was loosened, and although not depressed more than two lines of an inch, the surface of the brain was covered with a cake of extravasated blood.

This bone, at birth, is formed of four portions, joined together by cartilages, an arrangement designed to facilitate child-birth, or render child labour less difficult and dangerous. The older anatomists justly attached great importance to this bone, which was by some denominated the *os memoriæ*, or bone that contained or defended the organ of memory; and by others, the *os nervosum*, because it lodged or defended the chief, or most valuable part or portion, of the nervous mass. It was also ca-os *basilare*, and we cannot omit this opportunity of directing the attention of all who feel anxious to become acquainted with animal mechanism, to study carefully the structure, connections, and uses of this bone, to which there are not fewer than ten pairs of muscles attached.

The *Os Sphenoidum*, or sphenoid bone, (No. 3. fig. 1.) It is situated in the middle of the basis of the cranium, extending underneath from one temple across to the other; its figure is very irregular, and has been compared to a bat with its wings extended. This bone, at birth, consists of five portions, joined together by strong cartilages. Its connections are very varied and extensive, being connected with all the bones of the head, and it furnishes an example of no less than three kinds of union. This bone serves to form the basis of the cranium, and concurs in forming the orbits, the pituitary sinuses of the nose, the temples, &c. and to contain the middle lobes of the brain.

The *Ossa Temporalia* or *Temporal Bones*, (No. 5. fig. 1.) are situated at the sides and inferior part of the cranium, having an irregular figure, and each divided into two portions: a *squamous portion*, which is flat, and forms the squamous suture, and a part of the side of the cranium; and a *petrous portion*, sometimes termed the *os petrosum*, which is very irregular, and is situated at the basis of the skull. It is a hard, craggy protuberance, nearly of a triangular shape, and surrounds the organ of hearing, (which is contained within the temporal bones;) and below this petrous portion is a concave-angular projecting portion, which forms a part of the lambdoidal suture. The temporal bone has numerous processes, giving attachments to muscles and tendons, &c. the most important of which are the *auditory process*, or outer bony circle of the outer bony passage, to which the membrana tympani, and cartilage of the ear, are fixed. As there is an anatomical description of the ear in the Encyclopedia, illustrated by a cut, we have great pleasure in referring to that article. (See *Ear*.) Each temporal bone is *connected* with, or united to, the parietal, occipital, and sphenoid bones, and with the lower jaw. The *substance* of these bones requires a little notice, as the squamous portion consists of two tables and a diploe. The mammary process of cells which communicate with the cavity of the organ of hearing, and the petrous portion is very hard and compact.

The temporal bone, at birth, consists of three portions, the squamous and petrous, already noticed, and a *ringlike bone*, which surrounds the opening of the tympanum, or drum, of the ear. The last bone is seen completely ossified at the fourth month after conception: it is not a ring, though termed *annulus osseous*, for its ends do not meet. After birth, this portion is gradually elongated to form the *meatus auditorius externus*, or the canal or tube which is terminated by a membrane of the tympanum, and it is within the petrous portion that the organ of hearing is situated, which is perfectly formed at birth.

These bones, with the sphenoid, unite as a covering for the middle lobe of the brain, and, as already stated, afford accommodation to the organ of hearing, and [illegible] concur in forming the temples and basis of the cranium. A thorough acquaintance with the anatomy of the temporal bones is indispensible to the practical surgeon, particularly its cavities, furrows, canals, tubes, &c., as it not only contains the *carotid canal* for the passage of the chief artery of the brain, but likewise affords passage for the portio dura of the seventh pair of nerves, with other portions of the nervous system, as well as the internal *auditory passage*, by which the nerves of hearing have access from the brain to the ear with the aqueduct of the cochlea, which serves for the entrance and exit of the blood vessels of the ear, and an entrance and exit for the internal jugular vein, &c. The temporal bones are likewise very liable to be destroyed by venereal caries, and we have oftener than once seen the whole of the bone rendered worse than useless by this destructive affection, and even the bony parietes of the tympanum of the ear have been sometimes almost altogether annihilated by caries from common abscesses, which most frequently occurs in scrofulous habits. An operation used to be performed on the mastoid process of these bones, to remedy deafness, which consisted in removing a portion of the bone by an instrument of the trephine kind, and forming a communication with the external air through the mastoid cells with the cavity of the tympanum. Another operation, more simple and more certain, is perforating the membrana tympani. The artery which luxuriates on the external covering of the temporal bone, is frequently opened in cases of inflammation of the brain, and its course will be seen accurately delineated in Plate LXXXVI. fig. 4. of Surgery. See *Surgery* in the Encyclopedia.

The *os Ethmoideum*, or *Ethmoid bone*, is situated on the anterior part of the basis of the skull, behind the root of the nose, and between the orbits, and cannot be seen in any of the figures. It is united to the frontal, the two nasal, the two superior maxillary, the palatine, the sphenoid, and the vomer, by harmony, thus having a connection with not fewer than nine of the surrounding bones. It constitutes a part of the nose, orbits, and cranium, and forms an extensive surface for the organ of smell. The ethmoid bone has a number of processes, one of these is a *cerebral* or *cribriform plate*, which lies horizontal above the root of the nose, within the cavity of the cranium; it is everywhere perforated by a number of small holes, or foramina, through which the olfactory nerves pass into the cavity of the nostrils. Another is the *crista galli*, a process somewhat like a cock's comb, which proceeds upwards from the middle of the cribriform plate, and has attached to it the falciform process of the dura mater. There are a few other processes, but they are seldom noticed in practical works, either on medicine or surgery.

At birth, this bone is mostly cartilaginous; part of the ethmoid septum consists, however, of bony matter, and the superior turbinated bones are occasionally found ossified. This bone is frequently the seat of that destructive disease caries, of which either syphilis, or its mode of cure, or part of both, are most generally the producing causes. In these cases, the bone comes away by small portions, if not timely checked; but caries, and even complete destruction of the bone, has also arisen from tumors of the dura mater, and polypi in the nose.

There are no muscles attached to, or covering, the ethmoid bone.

The *Wormian, or Triangular Bones*, are irregular bones, which are sometimes found in the course of the suture, formed by the parietal and occipital bones. They are not constant, and received the name of a Spanish anatomist, who first described them.

Having described the eight bones of the skull, and shortly noticed the ossa Wormiana, or, as they are sometimes denominated, the *Ossa Triquetra*, it may not be out of place to allude more particularly to two remarkable openings in the connected bones of the cranium at the base, before we enter on a description of the bones of the face. These openings are a foramen, already noticed, for the entrance of the carotid artery, formed by an interval between the sphenoid and temporal bones, called the *anterior lacerated* foramen, the other between the temporal and occipital bones, the *posterior lacerated foramen*, or as in our description of the occipital bones, the *foramina lacera*, &c. Through this foramen the blood is poured from the lateral sinus of the brain, into the jugular vein. In the same locality, we may also observe the several cavities for supporting the lobes of the brain, but these astonishing structures, with the channels for the sinuses, &c. will be better understood after the reader or the student has become somewhat familiar with the anatomy of the brain. While alluding to these wonderful contrivances, with which every professional man should be especially familiar, we cannot omit this opportunity of recommending to the professional student two most invaluable works on this part of the human frame, viz. "Observations on the Surgical Anatomy of the Head and Neck, by the late Allan Burns," and "Illustrations of Surgical Anatomy, founded on the work of M. Blandin, by J. G. M. Burt." These books should find a place in the library of every practical surgeon.

Bones of the Face. The bones of the face are, with the exception of two, in pairs, and have been estimated as consisting of those of the upper and lower jaw. They are said, by some, to be united by what is called sutures, and named according to their connection with each other, but they are connected rather by simple, irregular lines, or as some of the older anatomists would say, by harmony, a term employed to denote a species of immovable connection of bones, in which their edges fit accurately together. The upper jaw is represented as formed of thirteen bones, viz., two superior maxillary, two nasal, two palatine, two malar, two inferior spongy, two lachrymal, and the vomer, which are connected to the cranium, and with one another, by harmony, or in the way already described. The under jaw consists only of one bone, and is the largest bone in the face.

Beginning at the external angle of the orbit, where the frontal bone is united to the cheek-bone, there is a visible *line*, which leads to the inferior opening in the orbit, proceeds upwards to the nose, whose root it crosses, and then traverses the other orbit to the external angle, and this line has been called the *transverse suture*. The other harmonies, or sutures of the face, are named after the bones which they unite, as the zygomatic, nasal, palatine harmonies, &c., and in shortly describing each of these individual bones, it is a matter of little consequence what arrangement is followed.

Ossa Nasi, or Nasal bones. (No. 8. fig. 1.) These bones form the bridge and external part of the nose, and each is connected with its fellows and the superior maxillary bone by harmony, and with the frontal and ethmoid by the transverse suture. Like most of their associates, these bones are perfectly formed at birth: at that early period, however, they are, like the other bones, soft and yielding, and many savage tribes compress the nose immediately after birth, conceiving a broad nose conducive to beauty.

The nasal bones are convex externally, thereby giving greater resistance to violence from without, and concave internally, to afford an ample cavity for the nose at their middle part; each presents a small foramen or hole, which passes through the bone, and transmits blood vessels and nerves to the pituitary membrane. There are two muscles attached to the nasal bone; the *occipito frontalis*, and *compressor naris*. The *ossa lachrymalia, or lachrymal bones*, are not to be seen in either view of the skeleton, but are two flat quadrangular bones, somewhat resembling the nail of the finger, situated one in each orbit at the internal angle, and separating the orbit from the nostrils. Each bone is connected with the frontal ethmoid, superior maxillary, and inferior spongy bone, by harmony. The surface towards the eye is concave, and has a *fossa* or groove, in which the lachrymal sac is situated. The internal surface is convex, and covers some of the ethmoid cells, and part of the nostrils. These bones, like the ossa nasi, are completely formed at birth, and they assist in covering the labyrinth of the nose, in forming the orbit, and in affording a situation to the lachrymal sac. Although the following more particular description of this sac, and its uses, is not strictly osteological, we offer no apology for noticing it in this place, as it is not alluded to in the very excellent article on the *Eye*, in the Encyclopedia. There is a small, red, fleshy point, called the *Puncta Lachrymalis*, or two small orifices, one of which is seen at the end of each eyelid, near the nose. From these openings, a canal goes downwards, and inwards, and meeting about half an inch from their origin, forms a sac, or lining, to the little cavity formed in the lachrymal bone, which is called the lachrymal sac, and is continued downwards into the nose, and thus conveys the tears from the inner corner of the eye into the nose. There is, moreover, a hard conglobate gland, of an oval form, called the *Lachrymal gland*, which has a number of excretory ducts, which convey the tears secreted by the gland on the surface of the eye, and any superabundance of the tears are absorbed, or taken up by the Puncta Lachrymalis, and conveyed through the sac and canal above described, into the nose, and pass off with the excretions of that organ. The lachrymal bones are perforated obliquely downwards, in the operation for fistula lachrymalis, in order that the tears may be conveyed into the nostrils, as by accumulating on the surface of the eye that organ would be rendered comparatively useless, from the great effusion of watery fluid on its surface. This kind of fistula is likewise not unfrequently followed by caries, or destruction of the bone. It will therefore be apparent to every reader, that these very small and obscure bones, sometimes called the *os unguis*, are the locality of very important organs in the human body.

Ossa Malarum, or *Cheek Bones* (No. 7. fig. 1.) These bones are sometimes called *ossa jugalia*, or jugal bones, and by others *ossa zygomatica*. They are united to the frontal, superior, maxillary, sphenoid, and temporal bone by sutures, and as every one knows, are situated at the sides of the face, and are nearly of a quadrangular shape. Each of these bones has five processes; an upper orbitary, forming part of the orbit, and the sharp edge of the temple; *inferior orbitary* opposite to the former, and constituting, in part, the bottom of the orbit and edge of the cheek; the *internal orbitary*, which also forms a part of the orbit; the *maxillary*, by which it is joined to the superior maxillary bone, and the *zygomatic process*, which is joined to the temporal bone, to form the zygoma or cavity under the zygomatic process of that bone transmitting the tendon of the temporal muscle like a yoke; and hence its name. Every part of the cheek bones is formed at birth, but the shape is rather more than triangular, and becomes gradually changed. Four muscles are attached; the *obliquus, inferior oculi, zygomaticus, major and minor masseter*, while the *orbicularis palpebrarum* covers it.

Ossa Maxillaria Superiora, or *the Upper Jaw Bones*, (No. 9. fig. 1.) The superior maxillary bone, at birth, consists of one portion, so that every process and cavity can be seen, but not so perfect as in the adult, where the superior maxillary consists of two hollow bones, situated in the anterior and middle part of the face, which assist in forming the nose, orbit and palate, so that their shape is very irregular. Each of the superior maxillary bones is connected with its fellow, with the os frontis, one os nasi, one lachrymal bone, the ethmoid sphenoid, one os jugale, or cheek bone, one palatine bone, and one inferior spongy bone, by harmony, and by the vomer, and both by gomphosis, a species of union already explained. The chief offices or uses of these bones, are to form part of the face, palate, nose, nostrils, and orbits, and to afford a convenient situation for the organ of mastication. The processes and cavities of these bones are numerous, but as no practical purpose could be served by their enumeration, in a work of this description, we do not attempt the task. There are, however, usually eight alveolar cavities in each bone, to receive the teeth, that is, in all sixteen, in the upper jaw, which is formed of these bones. There is also a cavity, the antrum maxillare, called also the *antrum Highmore*, in the body of the bone, between the orbital and palatine processes, which has an opening into the nostrils, and which is frequently the seat of disease, and therefore requires a more particular notice. An abscess forms in this antrum of Highmore, (the anatomist who first described it); and as it is necessary to perform an operation, to give exit to the pus or matter, a trocar must be introduced, and if the first of the molar teeth under the affected antrum be under its socket, the operation must be varied. These bones are subject to caries, from disease in the antrum, or cavity, and likewise from polypus, and it is not an unfrequent occurrence for nearly the whole bone to come away from the venereal disease, and also from a long continued salivation. In warm climates, flies have been known to deposit their ova, or eggs, in the nose, and in this antrum, where they soon become flies, which irritate the lining membrane, and induce inflammation and abscess, which must be evacuated by means of a trocar, or as a common abscess, from any other cause. There are no less than ten muscles attached to this bone, all connected with the face and motions of the jaws and mouth, which need not be enumerated by name.

Ossa Palatina, or *Palatine Bones*, which, from their situation, cannot be seen in the plate. Each of these bones is united to its fellows, to the superior maxillary bone, the sphenoid, ethmoid, inferior spongy bone, and bones by harmony, and from the posterior part of the palate, and part of the nose and orbit They are extremely irregular in their shape, and ascend laterally from the posterior part of the nose to the orbits. This irregularity of their figure, and their situation, has given rise to their division into four portions, and they have also the same number of processes, taking their names from those of the portions, viz. the *palatal, pterygoid, nasal*, and *orbitary*. The palatine bones are very perfectly formed at birth, and five muscles are attached to, or connected with, these bones. The palatine portions, or palatal plate, are extremely subject to caries from syphilis, and those who can afford it, have a substitute in the form of a gold or silver palate.

Vomer. The vomer, at birth, consists of two distinct lamellæ, with an intervening cartilage. Superiorly, it is united with the sphenoid and the ethmoid bones, inferiorly with the superior maxillary and palatine bones, and anteriorly to the cartilaginous septum of the nose; its office being to sustain and divide the cavity of the nostrils. It bears some resemblance to the plough share of former times; and hence its name, which is derived from *vomo*, to turn. It is, like its more immediate neighbours, very liable to caries.

Ossa Turbinata, or *Turbinated bones*, sometimes called the inferior spongy bones, are each united with the inferior maxillary; the palate lachrymal and ethmoid bone being situated in the side and lower parts of the nostrils, are of a spiral and convulated figure, and augment the surface of the organ of smell. They are particularly subject not only to caries, but to total destruction from syphilis and nasal polypi.

Os Maxillare Inferius, or Lower Jaw Bone (No. 10. fig. 1.) The lower jaw bone is united to the temporal bones by ginglymus, with the teeth by gomphosis, and with the os hyoides, or bone of the tongue, and other parts, by syssarcosis, or by means of muscle. It is shaped somewhat like a horse shoe, and occupies the inferior and anterior part of the face. It serves many very important purposes, giving place to the roots of the teeth, in the alveolar margin, constituting the inferior segment of the cavity of the mouth, and affording a point of adhesion to the muscles of the face, neck, larynx, and tongue, there being not less than twelve pair of muscles attached, both externally and internally, while one passes over it. The most important of these is the temporal muscle, which occupies the whole temporal cavity, and terminates inferiorly in a strong tendon, which is attached or inserted into the coronoid, or crow's beak like process of the inferior maxilla. Those who have a taste for animal mechanics, will find their curiosity, labour, and study, sufficiently rewarded by an attentive inspection of the connections of this bone. The ginglymus joint is formed by the large articular cavity of the temporal bone, receiving the condyloid, or rounded process of the lower jaw. In this joint there is a movable *inter articular cartilage*, which is very closely connected to the condyloid process, and the articular cavity by ligaments arising from their edges, and the whole is surrounded by a capsular ligament, fixed to the temporal bone and the neck of the condyle. The peculiar formation of this joint gives to the lower jaw many motions; thus, when the condyles or rounded ends slide forwards, the lower jaw passes horizontally forwards, as in the action of biting, or the condyles only may be brought forwards while the rest of the jaw passes backwards, as is the case when the mouth is open. The condyles may also slide alternately backwards and forwards, and *vice versa*, so that while one condyle advances, the other moves backwards, turning the body of the jaw from side to side, as in grinding the teeth. The inter articular cartilages are evidently designed for facilitating the movements of the articulation, by adapting themselves to the different inequalities in these several motions of the jaws, and for preventing any injuries from friction. This joint, however well secured, is occasionally dislocated in yawning, (*Scottice*, gaunting,) and by other causes: when so, the patient's countenance assumes a truly ludicrous appearance, and without great care, the operator who reduces the luxation, is almost certain to have his fingers bit.

Our limits forbid us noticing the numerous *processes* and cavities; suffice it, however, to state, that at birth, the lower jaw bone consists of two pieces, which meet at the symphysis, or middle of the chin, the symphysis being a species of bony connection, which means growing together.

This bone has been removed by a surgical operation; the whole bone has also in some cases been so much destroyed by necrosis, as to drop out, and more frequently portions have been separated. This has been in some cases produced by the long continued and improper use of mercury, especially when carried the length of salivation, and an abscess destroying the nutritious artery of the bone, has occasioned portions to exfoliate. The efforts of nature to restore these losses, is frequently astonishing, the place of both the bone, and teeth which it contained, being supplied by a hard or firm body of bone capable of performing the office of both.

The Cavities Formed by the Bones of the Face and Cranium yet require to be noticed, and these are, orbits, nostrils, and mouth, in the which are the teeth, (which have been already described,) the fauces, in the anterior part of which is the os hyoides, and the cavity of hearing, situated in the temporal bone; all of which have been mentioned in the preceding sketch, and therefore only require to be shortly noticed.

Under the forehead and on each side of the root of the nose, are situated two conoidal cavities, which are called the *Orbits*, and in these there are other smaller cavities, or depressions, which serve as lodging apartments for some apparently insignificant but important organs, such as the lachrymal gland, the lachrymal sac, a passage for the tears, &c. Seven bones enter into the structure of each of these orbits, viz. the frontal, maxillary, jugal, lachrymal, ethmoid, palatine and sphenoid; these serve the important purposes of lodging and defending the organ of sight, and its adjacent parts. The situation of the *Nostrils* need not be described, as they are well known to every individual. They are composed of fourteen bones, the names of which need not be enumerated, as all of them have been already described. The nostrils are furnished with several cavities and foramina, or holes, three pair of *pituitary sinuses*, viz. the frontal, sphenoid and maxillary, the caverns of the ethmoid labyrinth, the anterior foramen of the nostrils, the nasal duct, the spheno palatine foramen, and the anterior palatine foramen. The nostrils are designed doubtless to form a situation for the organs of smell, and their pituitary membranes, as well as to serve for speech and respiration.

The *Mouth* is covered laterally and anteriorly in the living body, by the cheeks and lips, and posteriorly it is continued into the fauces; the two superior maxillary bones and the palatine portions of the palate bones, forming, on its superior part, which is anteriorly closed by the teeth, already described.

The *Fauces*, or rather the cavity of the fauces, is situated under the basis of the cranium, with the superior bodies of the vertebræ and posterior part of the nostrils, and is composed of ten bones, all of which have been described, with the exception of the os hyoides. This cavity gives locality to the fauces, larynx, pharynx, and os hyoides.

Os Hyoides, or *Os Linguale*, or the *Tongue Bone*, is not immediately connected with any other bone, but is kept in its situation by numerous muscles and ligaments, there being no less than ten muscles attached to this small bone, which is located in the fauces, between the basis of the tongue and the larynx. It is connected to the styloid process of the temporal bone, the scapulæ or blade bone, the lower jaw, and sternum, or breast bone, by the various muscles, and with the larynx by ligaments.

The only other bony cavity formed by the bones of the face and cranium is the *Ear*, for a description and plate of which we have already referred to the article *Ear* in the Encyclopedia. Suffice it here to state, that in the fœtus, or new-born child, the squamous and petrous portions of the temporal bone, in the latter of which the organ of hearing is situated, are divided by a cartilaginous substance. In consequence of the bony fibres being more delicate than in the adult, very beautiful preparations of the bony organ of hearing can be made, well calculated to reward all the trouble and toil of a juvenile anatomist, and to strike the mind with astonishment at the simple, but beautiful, organization of the human ear.

Having now briefly described the bones of the cranium, and face, and some of their uses, and also noticed the various cavities and their contents, we shall now take a general view of the whole structure, external and internal.

Looking at the heads of different nations, and even at the heads of different individuals in the same nation, we find a very great variety in shape, not only in the bony cranium, but in the living head, with all its membranous muscular integuments and hairy envelopes. It is only, however, with the bare bony cranium, that we have now to do. In the generality of Europeans, the shape is oblong; in the Turk and Algerine, it is round; and in the Chinese and Tartar, it is broad. The cranium of the African is flattened on the forehead, and the teeth and chin are extended forward. The shape of the head of the Asiatic and American negro, also varies considerably from the European. On this subject some interesting information will be found in the Encyclopedia on the varieties of the human species, and there are likewise plates, illustrative of the subject. Suffice it here to remark, that some anatomists have attributed this variety in the crania of different nations to the management of the children when very young, supposing the head of the Turk to be rounded by an early use of the turban, while that of an Englishman is flattened by the chinstay; others are of opinion that the difference of the shape is not occasioned by any such accidental means, but by natural causes, with which we are as yet unacquainted. As this, however, is rather the province of the natural historian and physiologist, than of the anatomist, and as our limited space reminds us that we must not degress, we must now [illegible] plate the human cranium in its external aspect. Even in this view, the united bones we have described are divided into the cranium, or skull, and face. The adult cranium is, in general, spherical, but there is a great variety in skulls as well as in heads. The superior part of the skull is arched, and in some this arch is greater than in others; anteriorly, it is more or less flattened, posteriorly, more or less rounded, but always considerably more convex than on the interior part, and at the sides the cranium is flattened. There are a great number of processes and depressions on the outer surface, so as to render it very irregular in its appearance.

Upon viewing the external superior part of a skull, several zigzag lines are observable, called *sutures;* that which extends from one temple across over the head to the other temple is termed the *coronal suture*, (No. 2. fig. 1.) which unites the frontal to the parietal bones; another suture proceeds from one ear upwards across to the other, and is called the occipital, or lambdoidal suture; it unites the occipital bone to the two parietal, (No. 3. fig. 2.); and the suture which extends upon the crown of the head from the lambdoidal to the coronal, is called the sagittal. These are sometimes termed the *true sutures*, to distinguish them from two *spurious* or *squamous*, which are found on each side of the cranium, (No. 4. fig. 1.) extending from the temple backwards in the form of an arch, and uniting part of the temporal bone to the parietal. Besides these two sutures, two other portions are to be noticed, the one belonging to the lambdoidal and the other to the squamous suture, being in fact continuations of them, and are called *additamentums* to those sutures. The triangular shaped bones sometimes observed in the course of some of the sutures, are the Ossa Wormiana, or triquetra, or triangularia, already described.

The sutures are all more strongly marked on the external surface of the cranium, and their formation appears to be the effect of the particular manner in which the bones of the cranium ossify. Towards old age, bony matter is often deposited between the bones, so as to cause their disappearance, and sometimes, though seldom, at a very early peroid of life; and skulls have been met with in which the true sutures were obliterated at the age of twenty-eight, and likewise cases in which the sagittal and coronal sutures were likewise entirely obliterated in children of eight years old (Plate LII. Ency. figs. 1. 2. 3. for sutures).

The partitioning of the cranium into so many pieces, seems to be designed to facilitate the ossification after birth, and likewise to accelerate and render less difficult that event both to mother and child, as well as to prevent the spreading of fractures from one bone to another. There are, too, besides the sutures we have enumerated, several *prominences* upon the upper surface of the cranium, two on the frontal bone, one immediately over each eye, between it and the suture, one in the middle of each parietal bone, one in the middle of the occipital, pointing out the centre of ossification in these different bones.

The bones composing the upper part of the skull are composed of an external and internal table, which are of a compact structure, and of a spongy intervening substance, called the meditullium or diploe, already noticed when describing the structure of bones. The skull has been divided into the upper part now named, which is sometimes called the *calvaria*, and the basis. The calvaria comprehends all that portion situated anteriorly about an inch above the nose, laterally above the semicircular ridge of the parietal bones, and posteriorly about an inch above the occipital tubercle. It is this part (the calvaria) which is sawed off to examine the brain after death, and the operation of trepanning may be performed on any part of the calvaria, avoiding, if possible, those parts which lie over the sinuses of the dura mater. The calvaria is sometimes very thick, but it is not always clear whether this thickness be the effect of disease or not, but it has sometimes been, and perhaps justly considered, as one of the consequences of rheumatic inflammation. The calvaria is very subject to spongy venereal exostosis and caries, and one kind is peculiar to it, viz. the honeycomb caries, which consists in the total destruction here and there of one or both tables, so as to convey, though very imperfectly, the resemblance of the cells of a honeycomb. The compiler of this article, more than thirty years ago, when acting as assistant to the late Mr Taunton, surgeon to the City and Finsbury dispensaries, attended a patient of the former of these institutions, in which the greater part of the frontal bone was entirely destroyed by caries, from syphilis. The patient, a female, about twenty-eight years of age, recovered, and nature supplied new bony matter as a covering to the exposed brain.

Diastasis, or separation, and often the absorption of the bones of the calvaria, are frequently the consequences of an accumulation of water within the skull. Upon the internal surface of the upper part of the cranium there are a number of grooves in an arborescent form, made by the spinous artery of the dura mater, and the sutures are seen here in the form of a line not dove-tailed, and the whole surface appears more polished than the external. The *internal surface* of the basis of the cranium is divided naturally into eight considerable depressions, adapted to the lobes of the brain and cerebellum. Our limits forbid a particular notice of these cavities, with the different foramina and processes in the internal part of the skull, which, however, are all wonderfully contrived for the discharge of the respective offices they are destined to perform in the animal economy.

The Fœtal Cranium. From the facts already stated in our description of the separate bones, it will be found that the bones of the skull of a fœtus at birth, are far more numerous than those of an adult, for many of the processes of the latter are epiphesis in the former, a difference which has already been explained in a previous section of this article. Thus, for example, the occipital bone consists of four portions, and the sphenoid of three, and so of several other bones. There are no sutures in the cranium of the fœtus. The parietal and frontal bones do not coalesce until the third year, so that before that period there is an obvious interstice, commonly called *the mould*, or *open of the head*, technically the fontanel, or fons pulsatilis. There is also a lesser space occasionally between the occipital and parietal bones, termed the *posterior fontanel.* These spaces between the bones are filled up by the dura mater, and the external integuments, so that during birth the size of the head may be lessened, for at that time the bones of the head upon the superior part are not only pressed nearer to each other, but they frequently lap over one another, to diminish the size, during the passage of the head through the pelvis.

The fibres of the bones of the fœtal cranium are seen diverging from a central point of ossification towards the circumference, and each bone appears to be composed of a single lamina, so that ossification is going on from a considerable number of points at the same time, and the bones consequently approach each other in the same proportion till they finally arrive at the state of perfect bone, of which a description has been already given.

Having now completed all we intended on the osteological description of the skull, or cranium, and face, we shall next consider, and that *very briefly*, the bones of the trunk, and then those of the extremities. The relative shapes, connections, and sizes of these bones are more distinctly seen in the anterior and posterior views of the skeleton than those of the head, which is the most important part in an osteological bust, in every other point of view, and therefore, a more full and extended demonstration of its structure than is given of any of the other divisions of the bony system was more especially called for.

TRUNK. The bones of the trunk are composed of the *spine* or back bone, the *thorax* or *chest*, and the *pelvis* or *hips*. The spine, although spoken of as one bone, consists of not less than twenty-four bones, called vertebræ, which are arranged into three classes, the *cervical*, or those of the neck, (7) the *dorsal*, or those of the back, (12) and the *lumbar*, or those of the loins, (5.) As a short anatomical description of these different vertebræ, and of the intervening compressible and cork-like intervertebral substance will be found under *Vertebræ*, in the Encyclopedia, we refer to that article, and only notice, in this place, some of those circumstances which have either been omitted, or only very shortly noticed.

It will be seen by consulting the article referred to, that the spine is a bony column, the volume of the vertebræ being very considerable in the lumbar region, but decreasing in size as they ascend to the head, though with some irregularity, and forming a true natural pyramid, reposing its base on the sacrum, or large posterior bone of the pelvis, as a sort of pedestal, and having on its summit the head. Indeed, when taken altogether, it is an admirable structure, and it is no matter of surprise to us that almost every writer on natural theology should have selected this part of the human body as a specimen of the most exquisite mechanism.

The bodies of the vertebræ are, as already observed, connected by the intervertebral substance, and posteriorly by a yellow elastic ligament and by their oblique processes. The intervertebral substance, the peculiar nature of which has been hinted at in the fœtus, resembles more the structure of ligament, and in the adult it has a greater similitude to cartilage. Externally it is firm and hard, internally it becomes thinner and softer, and in the centre it is like mucus. A considerable change takes place in this substance in advanced life, when it becomes shrivelled, and loses in a great measure its elasticity, which occasions the decrease in stature, and the stooping forwards. Besides this change in old age, this substance also undergoes a temporary diminution after the full growth of the subject, from the weight of the body in an erect posture, so that people who have been long standing, or have carried a considerable weight, are found to be shorter, than when they have been long in bed; hence, we are taller in the morning than at night. By the aid of the intervertebral substance, and the processes and articular cavities of the bones of the spine, we have the finest specimens of motion by ginglymus, as shown in the connection of the atlas with the occipital bone of the *trochoides*, or that species of joint, or articulation, in which one bone moves round upon another, as in the connection of the first and second cervical vertebræ; and of syndesmosis, or that kind of movement so freely permitted by the union of bones by ligament, all which examples may be seen in the space of little more than one inch, in the connection of the head and spine, forming by far the most important articulation of the body. This, however, is not all; for the *trochoid joint* formed by the anterior arch of the atlas moving round the odontoid process of the dentatus, permits the head not only to rotate, or in moving from side to side, but as the head cannot move sufficiently round the dentatus without injuring the spinal marrow, all the cervical vertebræ likewise concur in the rotatory motion when in any considerable degree. Strong ligamentous fibres, too, pass from the sides of the odontoid process, over the atlas, to the os occipitis; which not only strengthen the articulation, but also limit its motions; and this odontoid or tooth-like process, is further retained in its situation by the transverse ligament of the atlas.

To those facts we may add, that numerous muscles are attached to the back part of the spine, and several on the forepart.

This beautiful structure, the spinal column, is however, like every other part of our frame, liable to accidents and disease; but we shall only notice those most common to the vertebræ. When an aneurism of the aorta is very large, the bodies of the vertebræ are occasionally absorbed, but the intervertebral substance remains entire. The writer of this article met with a case of aneurism in the aorta about twenty years ago, in a man of about forty-five years of age, in which a post-mortem examination was permitted, and four of the ribs were found to be partially absorbed, and part of the bodies of two of the dorsal vertebræ. The attentive reader will not fail to notice the extraordinary fact, that bone should be sooner absorbed than cartilage, a much softer and yielding substance; but the same phenomenon takes place in caries from other causes, and the spinal marrow is always defended in these cases by a deposit of coagulable lymph. Caries, distortion, and hydrorachitis, or spina bifida, are also not unfrequent affections of the spine. This latter disease, viz. *spina bifida*, consists of a tumour filled with water, which makes its way between the processes of a vertebra, and divides it in two.

In conclusion, much of the animal mechanism of the spine may be learned from examining the spine of some of the lower animals; and it may not be altogether useless to learn how to know any separate vertebra of the spine that may be found, and the class to which it belongs, which may be easily done by recollecting, if our descriptions are borne in mind, that the peculiar characteristic of a cervical vertebra is the perforations in the transverse processes. The dorsal vertebræ are distinguished by having articular surfaces, for the heads of the ribs, and the lumbar by their size and the length of their transverse processes.

The *Thorax*, or *Chest*, is formed by the *Costæ*

Ribs, twenty-four in number; the true ribs (No. 16. fig. 1.; the false, 17. fig. 1.) those well known semilunar bones are situated at each side of the chest, or thorax. They are connected with the vertebræ of the back, and, in connection with those vertebræ, form the posterior and lateral part of the chest. As we wish to include in this section the osteology or bony boundaries of that part of the trunk called the chest, or thorax, we remark, in general, that the chest resembles an arched bony cavity, narrow above, broad below, flat anteriorly, or in the front, hollow posteriorly, and convex laterally, and is composed of the twelve dorsal vertebræ already described, the sternum or breast bone, and the twenty-four ribs just noticed.

The *Sternum*, or *Os pectoris*, or breast bone, and its situation, are well known; it is an oblong flat bone, somewhat of the shape of a dagger, of a very spongy texture, and mostly consists of two, and sometimes of three, portions. A sharply pointed cartilage, situated at the pit of the stomach, is attached to the inferior extremity of the breast bone, and, from its supposed resemblance to a sword, called the *zyphoid*, or sword-like cartilage, and sometimes the ensiform cartilage. The bones then, above named, viz. the dorsal vertebræ, the twenty-four ribs, and the breast bone, constitute the *thorax*, and the obvious uses of this bony casement, are to defend those important organs, the heart and lungs, and their more immediate appendages, the blood-vessels and air-vessels; and to give adhesion to the mediastinum, that membranous partition which divides the chest into two cavities, and also attachment to the other muscles, especially those concerned in respiration.

In addition to what is stated above, respecting the situation, number and designation of the ribs, &c. we may here observe, that they extend obliquely, from the dorsal vertebræ round towards the sternum, to which they are connected by strong cartilages. The seven ribs on each side, whose cartilaginous extremities are affixed to the breast bone, are those called the *true ribs;* and the five on each side whose extremities do not reach the breast bone, are the *spurious*, *false* or *floating* ribs.

The first rib is very short and much curved, broader than the other ribs, and its external extremity is united to the breast bone by a short portion of cartilage at a right angle. The second is longer than the first but shorter than the rest. The other ten differ chiefly in their length, which gradually increases from the first or uppermost to the seventh, or last true rib, from which they gradually diminish to the twelfth. Their obliquity, in respect to the spine, increases as they descend, as does the distance between the head and angle of each rib from the first to the ninth. The two lowest ribs differ from all the rest, having no tubercle for the articulation or union with the transverse processes, and are much shorter. Although the views of the skeleton in the plate give a pretty plain representation of the relative situations and articulations, it may be more clearly understood by stating that while the true ribs articulate with the breast bone, the eighth rib, or the first of the false ribs, is attached by its cartilage to the lower edge of the cartilage of the seventh, or last of the true ribs, the ninth in the same manner to the eighth, and the tenth to the ninth, the cartilage of each rib being shorter than that of the rib above it, and the two last, as may be seen in the plate, are not fixed at their anterior extremities, but hang loosely, being supported by ligamentous fibres.

The only other circumstances of particular interest are, the longitudinal groove on the inferior and interior surface of each rib, for the passage of the intercostal artery, vein, and nerve, and the kind of connection formed between the spine ribs and sternum. The joints formed by the connection of the ribs with the vertebræ and sternum are of the ginglymus kind, allowing the alternate motion of the ribs rising and falling, as we draw in and let out our breath, while the great head of each rib is hinged in the invertebral substance, touching two vertebræ, and surrounded by a capsular ligament; and the cartilages of the ribs which join the sternum are similarly connected by the same kind of ligaments and ligamentous fibres which expand over the breast bone.

The ribs, at birth, differ very little in substance and form from those of adults, and it need scarcely be observed that they unite with the other parts of the thorax, for the same purposes of giving form to the chest, to act in respiration, to defend the vital viscera, and give attachment to muscles.

The bones of the thorax, like the others, are subject to accident and disease, great portions of the ribs being absorbed by the pressure of aneurisms, as stated in our paragraph on the vertebræ, while caries sometimes attacks the sternum, and the bone crumbles away insensibly. The sternum is likewise liable to be operated upon by the trephine, to afford exit to the matter of an abscess in the anterior space of the mediastinum. The xyphoid cartilage attached to the inferior part of the sternum occasionally takes on a disposition to curl outwards, and produces considerable pain and uneasiness.

We next descend to the *loins*, which have been already described, in the article *Vertebræ*, in the Encyclopedia. The *Pelvic Region* forms, as it were, the basis of the trunk of the skeleton, and has received its name from its resemblance to a bason formerly used by barbers. The fore part and sides of the pelvis, or bason, and lower part of the sides of the abdomen, are constituted by the two large, broad and irregularly shaped bones, called *ossa innominata*, or hip bones, and the upper edge is frequently called the hip. Each of these bones is usually described as three bones, from its having been composed of three distinct portions or pieces, in the first period of life, and these portions yet retain the same name, though yet united into one solid broad bone, and are referred to by figures in the plate. They are the ilium, (No. 23. fig. 1.) the ischium, (25. fig. 1.) and the os pubis, (26. fig. 1.) There is likewise an eminence called the cresta, or spine of the ilium, (24. fig. 1.) and other eminences, spines, and tuberosities on these bones. There is one cavity, however, in each of the hip bones which deserves particular notice, viz. the *acetabulum*, which receives the head of the os femoris, or thigh bone. The *os sacrum*, (10. fig. 2.) forms the back part of the pelvis, and is situated at the bottom of the spine, and of course a posterior part of the pelvic region. It derives its name either from its being offered in sacrifice by the ancients, or from its supporting the organs of generation, which they considered as sacred. It is of a triangular shape, bent forwards, and by many anatomists considered as a bone of the spine, and from its irregularities, processes, and foramina, it seems to have some claims to be considered as such. The only other bone of the pelvis is the os coccygis, (11. fig. 2.)

and consists very frequently of two, three, or four portions, although in advanced age it is one solid bone; it is triangular, or irregularly shaped, and is placed at the extremity of the sacrum. It is supposed to have some resemblance to a cuckoo's bill, and hence its name. It sustains the rectum, or lower portion of the bowels, and prevents the rupture of the perineum in child labour, one of the most distressing accidents that can befal a woman, and it sometimes happens that in labour it is separated from the sacrum.

The pelvis, or bones which constitute that part of the skeleton, are connected superiorly with the last lumbar vertebra, which is united to the os sacrum, and the sacrum laterally with the ossa innominata, while each of the innominata, or hip bones, is connected with its fellow by symphisis at the os pubis, or pubic portion already alluded to, and with the sacrum posteriorly, and to the head of the thigh bone, which, as already stated, is lodged in the acetabulum. These united bones form the pelvis, on which the spine rests, and which retains the gravid uterus in its situation, constitutes the acetabulum for the thighs, and gives attachment to numerous powerful muscles and ligaments, also affording lodgment for the internal organs of generation, the urinary bladder, the rectum, and occasionally part of the small intestines. In consequence of its subserviency to all these important offices, it is necessary that it should be permanently fixed and immovable, but more especially on account of the great force applied to its parietes by the natural mechanism of parturition, or child labour. The obstetric properties of the pelvis can only be learned from that of a well-formed adult woman, that is, one eighteen or twenty years of age, which is the period of life, in temperate climates, at which she is capable of becoming a mother, with perfect safety to herself, and to her infant. At an earlier age, the pelvis is not sufficiently strong, or developed, to bear the burden of pregnancy, or force of parturition, and at a later age the bones which form the osseous canal of this part are too firmly articulated, and their ligaments too rigid and strong to allow the commodious and easy passage of the infant. At both ages, women purchase the pleasures of maternity at a very dear rate, generally at the risk of their own, and that of their infant's, although there are some exceptions, for we have seen a first and easy natural labour in a girl of fifteen, and another in a woman who had arrived at forty-eight before she became a mother. It may not, however, be out of place shortly to notice the peculiarities of the male and female pelvis. In the *male*, the pelvis preserves its infantile properties, it is deeper than in woman, its short or sacro-pubic diameter is not more than three inches, and the transverse measures four and a half, and bis-ischiatic three and a half. The arch of the pubis is short and triangular, not expanded as in the female. The sacrum is less hollow, and the bones are thicker and stronger in general, and more solid, so as to render it physically impossible for an infant of full growth to pass through the male pelvis, and hence the absurdity of the old fictions, that hermaphrodites were fathers and mothers on different occasions; but indeed there has never been known yet to exist such a being as a perfect human hermaphrodite.

The pelvis in the female is broader at the hips, as well as in every other part; and here nature seems to have sacrificed the facilities of motion, as may be seen when a female attempts to run, to the advantages of pregnancy and parturition. There is another most striking peculiarity: the articulations of the female pelvis are not anchylosed, while they are firmly ossified in the male. Observation, however, abundantly proves that with many women the pelvis retains the form which characterised it during infancy and puberty, and which nearly approaches to that of the male, but such a pelvis is considered deformed, and is sometimes called a false pelvis.

The pelvis may be deformed in its rim, cavity and outlet, and offer serious impediments to the passage of the infant, or render delivery dangerous, difficult, or impossible. On the contrary, it may be too capacious, or possess excess of amplitude, thereby affording too ready a passage to the fœtus. In the latter case, delivery will suddenly take place, often unexpectedly, and in extraordinary situations, as on the high-way, in a stage-coach, or in the sitting room, before the woman can retire to her apartment. Ample evidence is afforded of this fact, not only in works on obstetricity or midwifery, but even occasionally in the public newspapers, and by the way, this is one reason, among many others, why every man liable to be called upon to act as a jurist, should be acquainted with at least the general facts of anatomical science, as women have not unfrequently been tried for child-murder, when it has often appeared in evidence that they had been delivered, or that the child was born in circumstances they could neither foresee nor prevent, and had been killed by the fall, or suffocated, or drowned in some substance among which it might drop. In fine, the obstetrician must study this part distinct from the rest of the body, as one intimately connected with his art, as the book of nature, which must be always consulted, and which affords us the best precepts for practice. A knowledge of its peculiarities, its regions, dimensions, directions, planes, axis, structure, connections, and varieties, are all indispensably necessary to those who wish to practise with dexterity the obstetric art, as by ignorance of these many mothers and children have been sacrificed.

The *Upper Extremities.*

The upper extremity, (for we shall notice them in the singular, seeing that the description of the one is almost entirely the same as that of the other,) consists of the collar bone, or clavicle, (No. 18. fig. 1.) the shoulder blade, or scapula, (13. fig. 2.) the bone of the arm, called the os brachii, or os humeri, (20. fig. 1.) the foramen, composed of the ulna and radius, the former, (21. fig. 1.) and the latter, (22. fig. 1.) and the hand, consisting of the carpus or wrist, (19. fig. 2.) the metacarpus, (20. fig. 2.) and the fingers, or digiti manus, (21. fig. 2.)

The *shoulders* consist of two bones, the clavicle and scapula, which are united together at the acromion process, (15. fig. 2.) immediately over the top of the os brachii, or bone of the arm, and form what is properly termed the shoulder.

The *clavicle*, or *collar bone*, so termed from its resemblance to an ancient key, is a long, roundish bone, shaped like the letter *s*, and its situation is very distinctly seen in the plate, (18. fig. 1. and 12. fig. 2.) This small bone performs some very important offices, connecting the shoulder blade and bone of the arm, to the thorax defending the subclavian vessels, regulating the motions of the scapular, and is in fact the axis on which the whole upper extremity rolls, the scapular serving raas a socket for the os brachii, and hence such animals as make much use of their fore legs, are furnished with clavicles, as the ape, bear, bat, mouse, badger, mole, &c. and an example may be seen in plate LII. article *Mammalia*, in the Encyclopedia, (fig. 13.) and the same plate, if carefully examined in connection with the article which it illustrates, will shed considerable light, not only on human, but comparative osteology. The *scapula* is very distinctly seen in the back view of 13. fig. 2; 14. marking its spine, which is in the middle of its external surface, arising small from the posterior edge of the scapula, becoming gradually higher and broader as it reaches the anterior part of the scapula, where it terminates in a broad, flat process, called *acromion*, the anterior edge of which forms an articulation for the clavicle; the situation of this is marked 15. fig. II. The shoulder blade is of a triangular figure, situated on the back and upper part of the ribs, forming the posterior part of the shoulder, and so very thin as to be transparent in its greatest extent. It is retained in its situation merely by muscles, that unite it to the head of the os hyoides, the ribs, the vertebræ, and the upper arm bone; and by means of these muscles, it consequently has the power of moving upwards, downwards, backwards; it will therefore be obvious, how very necessary that its motions should be regulated by its connection with the clavicle. None need be told that the *shoulder joint* is one of considerable importance, and that its motions are loose, movable, and very free, and that it is even more liable to be luxated, or displaced than any other joint in the human body. It is formed by the large round head of the arm bone, and shallow, articular cavity of the scapula, the sides of which are elevated with cartilage, and a capsular ligament, large, wide. and loose, is fixed to the neck of the scapula and os brachii, and surrounds the joint. Its almost constant movement renders it requisite that it should be abundantly supplied with synovia or joint oil, and for that purpose, there are several bursæ mucosæ, opening into it, independent of the natural secretion of the capsular ligament. The motion of the joint is indeed partially restrained, and rendered more secure by the acromion process, which projects over it, and by another process, called the coracoid process; below a strong ligament likewise extends from one of these processes to the other, and another ligament extends from the acromion, to the capsule of the joint, and farther security is derived from four muscles, which are likewise inserted into the capsular ligament.

The *Arm* consists of one long bone, os brachii, or os humeri, and occupies the space between the junction of the clavicle and scapula with the fore arm. It is a long cylindrical bone, having a rounded head on its superior part, and on the inferior extremity are three processes, namely, an external and internal condyle, and the trochlea of the bone, on which the ulna moves.

It is connected, as already stated, with the bones of the shoulder, or, more correctly, its hemispherical head is received into the glenoid cavity of the scapula, constituting a ball and socket joint. It has several furrows, or cavities, which serve for the attachment of muscles, not less than twenty-four being attached to this bone; it is united to the two bones of the forearm by means of a ginglymus joint.

Fore Arm. The *ulna* (17. fig. 2.) forms the internal and posterior part of the fore-arm, and the *radius*, (18. fig. 2.) the external and anterior. The *ulna*, or larger bone, has a large upper extremity, scooped out in front, forming what is called the greater segmoid cavity, with which it articulates with the base of the os brachii. Below this apparent excavation by the coronoid process, and above by the olecranon, or elbow, upon which we lean. The ulna is a long bone, and thicker above than below, and there is likewise a lesser sigmoid cavity at the side of the coronoid process, in which the rounded sides of the head of the radius play. The lower end has a rounded articular surface for the radius, and beneath a shallow cavity for an inter articular cartilage, the medium of connection with the wrist, and its extreme point forms what is called the styloid process.

The *radius*, or lesser bone, is named from its imaginary resemblance to the spoke of a wheel, or to a measure used by the ancients. It is situated on the outside of the forearm; the body of the bone inclines to a triangular form, the upper extremity, or head, presenting a circular cavity, articulating, as already stated, with the smaller condyle of the os brachii. Its circumference joins with, and turns in the smaller sigmoid cavity of the ulna; below this circular cavity the bone is contracted, forming a neck, which terminates in the bicipital tubercle, to which is fixed the biceps muscle. The lower end of the radius has a superficial cavity, articulating with the scaphoid and semilunar bones of the wrist. On the inner side there is a narrow concavity, in which the lower extremity of the ulna rotates, and the extreme point of the bone, like that of its fellow, is called the styloid process.

The first of these bones, the ulna, is, as has been already stated, connected superiorly with the trochlea of the brachii by *arthrodia*, inferior with the carpus by *arthrodia*, and with the radius by the trochoides, as in pronation, and supination. The radius is connected with the brachia by ginglymus, to the ulna by an inter osseous ligament and trochoides, and to the carpus by arthrodia. Did our limits permit, we might advert at considerable length to the mechanism of the bones and joints of the lower arm, to which two bones are attached not fewer than twenty muscles; but we must content ourselves with referring to Dr Paley, and his noble, and learned, and ingenious commentators, Lord Brougham, Sir C. Bell, T. Dick, LL. D., Dr Roget, and Mr Paxton, to all of whom the public at large, but especially juvenile inquirers, are under the deepest obligation for the pains they have taken to render anatomical and scientific details pleasing and instructive to every class of readers.

The Carpus, or Wrist, is situated between the forearm, and the metacarpus, and is composed of eight bones, which lie close to one another in a double row, one of which is superior and the other inferior; and all these bones bear some resemblance to the names given, or the things from which those names are derived. In the superior row from the thumb, to the little finger, are the os scaphoides, or naviculare, lunare, cuneiform, and orbicular, and in the lower row are the os trapezium, trapezoides, magnum and unciforme. The nature of their union with the fore-arm has been already stated, and they are connected with the metacarpus by arthrodia. A capsular ligament surrounds them, and the joint is strengthened by several others, which proceed in all directions. The bones of the wrist assist in forming the hand, and are, by most anatomists, included under the same division. These eight bones have a gentle motion on each other, and on the fingers, and also admit of a very limited motion in every direction with the bones of the arm, and give attachment to ten muscles.

The *Metacarpus*, or bones of the palm of the hand, are placed between the carpus and fingers, and are four long rounded bones; although some anatomists, including the first bone of the thumb, reckon five metacarpal bones. The upper ends of all these bones have plane surfaces to unite with the wrist, and where they are contiguous to each other, they have also flat articular surfaces, and their lower ends articulate with the fingers by convex heads to allow of a free motion, in every direction having a lateral motion, as well as that of flexion and extension. They form the middle part of the hand, and have not fewer than eleven muscles attached to them.

The *Digiti Manus*, or fingers, the situation and number of which, it is unnecessary to state, consist of twelve bones, arranged in three rows, termed Phalanges digitorum; they are round on the back, but flat, and somewhat concave in front; and there are eighteen muscles attached to the finger bones. The bones of the *thumb* are three, and very much resemble the bones of the fingers, but as the thumb is the antagonist of the fingers, it is much thicker and stronger, and the first bone is connected by a double articular surface to the trapezium, and there are three muscles attached to the thumb. Those who wish to study the wonderful mechanism of the hand and wrist, will derive much pleasure, and a vast portion of interesting information, by consulting Sir C. Bell's *Bridgewater Treatise*. We cannot, however, resist observing, that although it would seem superfluous to enumerate the uses of the hand and fingers, as the instrument of defence, labour, &c. yet that as one part has a very obscure motion, and serves as the base for the other, which performs the chief of the motions, a few remarks appear to be called for. We find, in the first place, that the carpus, or wrist, being composed of many small bones, yields a little to our force and accommodates itself to the different motions of the hand, while the metacarpus, by being composed of several bones, enables us to form a hollow on the palm of the hand, while the space between them serves for the lodgement of the muscles. Each finger, too, being composed of three bones, enables us to grasp and perform several motions, which could not be effected were it in one bone. Finally, the general convexity of the bones of the hand strengthens the whole considerably, while the hollow on the inside affords a passage to vessels and nerves, and contributes to other conveniences which we dare not now attempt to enumerate.

Vascular System. This system, a description of which is sometimes called Angiology, or doctrine of the vessels, consists of long membranous canals, or vessels, and ducts, which convey blood, lymph, chyle, or a secreted fluid through every part of the body, and indeed, except the epidermis or scarf skin, the membrana arachnoidea, (or net-like membrane, which is situated between the dura and pia mater, and which surrounds the cerebrum, cerebellum, medulla oblongata, and the spinal cord) and nails, every part of the body has vessels which injections demonstrate, and these vessels are divided into arteries, veins, absorbents, and excretory ducts. For a more particular account of the arterial and venous systems, see *Heart* and *Blood-vessels* in Encyclopedia; and for *Absorbents*, see *Lymphatics*, in Supplement.

The Nervous System. In a short [illegible] sketch like this, it is impossible to do any thing like justice to the nervous system, which [illegible] as Sir C. Bell terms it, is "the highest department of anatomical and physiological study." I[illegible] now, too, one branch of those sciences which has, by the industry, zeal, and talent, of our distinguished countryman just quoted, and another countryman and relation of Sir Charles', Mr Sha[illegible] with Messrs. Mayo, and Newport, and Dr Ha[illegible] of London, M. Magendie, of Paris, Dr Grav[illegible] of Dublin, and others,—experienced a com[illegible] revolution in the course of only a few years, [illegible] as to render any attempt at even a brief [illegible] view of the truly interesting discoveries [illegible] chiefly by Sir C. Bell, altogether impossible in the limits this article is permitted to occupy. Much, however, that is important, will be found in the articles *Nerves*, *Brain*, &c. in the Encyclopedia and *Nervous System* in the Supplement

The Mucous, Serous, and Glandular Systems. As it would be foreign to the nature of this article, to enter into any thing like an anatomical description of the extensive mucous tissues which line the different cavities of the body, or the almost equally extensive *serous tissues*, these tissues, as also the glandular system, will be found described under their respective designations, in the *Supplement*.

Adipose and Cellular Systems. We have classed these together, as they have by [illegible] although without a shadow of truth, been [illegible] dered as one; still, however, they are very intimately connected. The *cellular substance*, or texture, [illegible] the most extensive in its distribution of any [illegible] the machine, as it is found in almost every [illegible] of the body, and forms a part of almost every [illegible] gan. It is composed of laminæ, and fibrous [illegible] so as to form cells, and a web-like structure, [illegible] from its very extensive distribution and the [illegible] communication of its cells, when it is [illegible] air, or thin fluids, may be made to pass [illegible] it, from one region of the body almost [illegible] other, and this is exemplified even in the [illegible] body, in the diseases called emphysema, or [illegible] dropsy, and anasarca, or general watery [illegible] and is also well shown in dead animals, by [illegible] blowing up their veal and mutton, and [illegible] the cells with air.

Before proceeding to a consideration of the [illegible] division of our subject, or placing over the [illegible] a dermoid covering, we shall simply [illegible] internal viscera or contents of the four great [illegible] ties of the head, chest, abdomen, or belly, [illegible] pelvis; referring, for the anatomical [illegible] to the English names of the several [illegible] the alphabetical arrangement in the Encyc[illegible] and this Supplement. We may at the [illegible] observe, that some interesting information [illegible] ing the stomach, liver, &c. and the other [illegible] poetic viscera, as they are sometimes called, [illegible] found in the articles *Digestion*, *Dyspep*[illegible] other documents referred to in those artic[illegible]

The head and face, or in other words, al[illegible] internal cavities, osseous and fleshy, or har[illegible] soft, which rest upon the atlas, or first vert[illegible] the neck, contain the brain, with its [illegible] blood vessels, absorbents, glands, and cove[illegible] the organs of sight, hearing, smell, and taste; and a portion of those organs connected with *respiration*, *deglutition*, *speech*, *sound*, &c., and that portion of medulla oblongata which lies upon the cuneiform process of the occipital bone, the descending portion being, till it terminates in the medulla spinalis, covered by the cervical vertebra. The upper part, or commencement of the larynx, or opening which terminates in the trachea, or wind pipe, and of the pharynx, which terminates in the œsophagus, or gullet, are all contained in, or connected with, the same cavities.

The *Chest or Thorax*, is divided internally into five cavities, which contain the following viscera, viz. the pleura, the lungs, the thymus gland, the œsophagus, thoracic duct, arch of the aorta branches of the vena cava, the vena azygos, par vagum and great intercostal nerves, and the cavity containing these is separated from the abdomen or belly by a large and powerful muscle, called the diaphragm, or midriff. The *Abdomen*, or belly, is divided into several regions, as will be seen from the plate, and its internal parts and viscera are the omentum, stomach, small and large intestines, liver, gall-bladder, mesentery, lacteal vessels, spleen, pancreas, kidneys, suprarenal glands, part of the aorta descendens, and vena cava ascendens. The pelvis contains the urinary bladder and the internal parts of generation.

The Dermoid System consists of the *skin*, the external envelope of the body, which varies in its thickness from about a fifth to a twentieth of an inch. It is exceedingly tough, and is by far the most elastic of all the softer textures. The skin consists of two parts, placed one above the other. The inner lamina is called the *true skin*, and the outer *cuticle*, *epidermis*, or *scarf skin*.

Although we are reminded that space forbids us pursuing the interesting facts connected with the structure and functions of the skin, our sketch would be very defective did we omit to notice another use of the tegumentary covering of the human body, as without this our hints on the Nervous *System* would be almost unintelligible. The skin then is prolonged into various passages of the body, the eyes, nose, ears, mouth, lungs, œsophagus, stomach, intestines, urethra, bladder, ureters, kidneys, vasa deferentia, and tubular structures in the testes of males. In females, it lines the vagina, uterus, uterine, or Fallopian tubes, and lactiferous tubes in the mammæ or breasts. The skin then, taking an internal course, changes its name, and assumes that of *Mucous Membrane*, and this membrane is attached to subjacent organs by cellular tissue. That portion of it which lines the digestive and respiratory organs was termed gastro-pulmonary, by Bichat, and that which lines the genital and urinary organs, mucous membrane. The tegumentary and lining membrane of all the passages of the body are continuous, and therefore the diseases of the one will affect the other.

The appendages of the skin are the nails and hairs. The hairs are horny filaments, which appear on the human body, except on the palm of the hand, but very much on the scalp of the head, the eyebrows, eye-lashes, face, nose, ears, axillæ, pubes, &c. See *Hair* in Encyclopedia.

The nails are well-known, horny productions, composed of lamellæ or scales, and the root of each nail is received into a sulcus or groove in the skin.

We have now completed the short sketch or history of the structure of the human body, and seen that body covered with its universal envelope, the skin; let us now then attentively survey the wonderful machine, as it appears denuded of artificial covering, so as to render our short, imperfect, but, we flatter ourselves, comprehensive anatomical details, somewhat more complete.

A formal description of the external appearance of the human body, in its full grown state, is altogether unnecessary, as it may be presumed to be familiar to every one. For the sake of greater clearness, however, in describing the situation of the internal parts, we have, with the aid of figures, endeavoured to fix the limits of the external regions of the body, adopting the popular and well marked divisions of the *head*, *trunk*, and *extremities*.

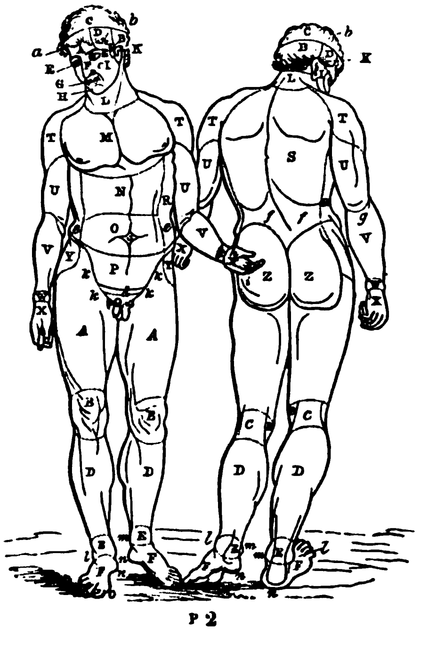
Regions of the Head.

A The Brow or Forehead; the space *a*, towards the middle and lower part of it, being called Glabella.
B The Occiput or Hindhead; its most prominent point backwards being denominated the Occipital Protuberance.
C The Crown of the Head; the most prominent point *b*, on each side of it, being called the Parietal Protuberance.
D The Temple on each side of the head.
E The Region of the Eye on each side of the head.
F The Region of the Nose.
G The Region of the Mouth.
H The Chin.
I The Cheek on each side of the head; *c*, its most prominent point above and laterally being called the Malar Protuberance
K The External Ear on each side of the head.

The term *Face* is applied to all that part of the head which includes the Regions of the Brow, Eyes, Cheeks, Nose, Mouth, and Chin.

Regions of the Trunk.

L The Region of the Neck, bounded on each side, below and before, by the ridge called the collar.
M The Breast.
N The Epigastrium or Epigastric Region, at the upper and middle part of which there is a slight depression called the Pit of the Stomach or Præcordia.
O The Umbilical Region
P The Hypogastrium or Hypogastric Region.
Q The Pudendal Region, of which the upper part *d*, is called



the Pubes, and which comprehends below the Penis and Scrotum, the Perineum and Anus, in the Male, and the Vulva, Perineum, and Anus in the Female.

R The Side, right and left, of which the lower part *e*, is called the Flank.
S The Back, the space *f*, on each side of it below, being called the Loin or Lumbar Region.

Regions of the Extremities—Of the Upper Extremities.

T The Shoulder.
U The Arm.
V The Fore arm, in its most prominent point *g*, above and below, being the Elbow.
W The Wrist.
X The Hand, on which the prominence *h*, in the palm, is called the Ball of the Thumb, and *i* the Ball of the little Finger.

Regions of the Lower Extremities.

Y The Haunch.
Z The Hip or Buttock.
A The Thigh, which is separated from the Hypogastrium and Pubes by the hollow *kk*, called the Groin.
B The Knee.
C The Ham.
D The Leg
E The Ankle, in which the prominence *l* is the External and *m* the Internal Malleolus.
F The Foot, in which the prominence *n* in the Sole is called the Ball of the Heel, and *o* the Ball of the Great Toe.

By the aid of these views of the external regions of the human body, any intelligent patient or his friends will have no difficulty in describing to a physician or surgeon at a distance the seat of pain or disease. This we consider to be a matter of the first importance, and we have therefore endeavoured to render the subject still more clear by the preceding figures.

Let one example suffice: say that a patient laboured under some harassing pain in a given part of the head, chest, or abdomen, and was not able to explain or exhibit the locality; suppose it was in the region of the head, let him inform the physician whether it lay in the divisions A, B, or C, or any other division, and then the medical adviser would have little or no difficulty in ascertaining the seat of the pain or disease.

The general reader who wishes to prosecute this interesting science, will find much useful information in the short anatomical systems of Paxton, Quain, Cloquet, and Craigie; the latter is a truly valuable, yet cheap publication, forming a neat quarto volume, with exquisite engravings. Those who wish to dip deeper into the subject, will consult the works of the Bells and Bransby Cooper, with Todd's truly excellent Cyclopedia of Anatomy and Physiology, &c.

The Bridgewater Treatises, by Sir Charles Bell and Dr Roget, &c. with Lord Brougham's and Sir Charles Bell's edition of Paley's Natural Theology, will likewise amply repay an attentive perusal, and induce the student to exclaim, in the language of an inspired poet and king, "Verily I am fearfully and wonderfully made."

ANEURISM (*a*,) has been defined a preternatural tumour, formed by the dilatation of an artery, of which there are three species, viz. the *true* aneurism, of which there are two species; second, the *false* or *spurious* aneurism; and third, the *varicose* aneurism. True aneurism is a circular or uniform dilatation of the three coats of an artery, and is commonly met with in the aorta, accompanied with thickening of the serous muscular coats, and depositions of calcareous matter on the exterior surface of the serous.

The *symptoms* of circumscribed true aneurism generally occur as follows: an extraordinary throbbing in some particular situations is felt by the patient, and, on examination, he discovers there is a pulsating tumour, which entirely disappears when compressed, but returns again as soon as the pressure is removed. It is commonly unattended with pain or change in the colour of the skin. When once the tumour has originated, it continually grows larger, and at length attains a very considerable size. The danger of an aneurism arises when it is on the point of bursting, by which occurrence the patient usually bleeds to death, and in some cases, in the course of less than one minute. The fatal result may generally be foreseen, as the part about to give way becomes particularly tense, elevated, thin, soft, and of a dark purple colour.

The *false* or *spurious* aneurism, is always owing to an aperture in the artery, from which the blood gushes into the cellular substance. This is particularly apt to occur at the bend of the arm, where the artery is exposed to be injured in attempting to bleed. When the artery has been wounded by an ignorant and careless operator in blood-letting, it is immediately known, as soon as the lancet has punctured the artery, by the blood spouting with an unusual force, with occasional interruptions, and of a bright scarlet colour, not so dark as the blood from the vein. The blood, however, flows out in an even and less rapid stream when pressure is applied higher up than the wound. These are, then, the most characteristic marks of the artery being punctured, for blood will often be found to flow from a vein with great rapidity, and that too in a broken current, when the vein is very turgid, and situated immediately over the artery, which, by its pulsating, imparts its motion to it. The operator in endeavouring precipitately to stop the bleeding by pressure, often occasions a diffused false aneurism. The shutting up the external wound by a bandage, and keeping it together till it unites, prevents the blood from escaping externally; but as the wound in the artery is not healed, the blood escapes, and insinuates itself into the cellular substance; or, as they would say in some parts of Scotland and Ireland, between the *fell and the flesh*. This produces an uneven and often knotty swelling, which extends upwards and downwards along the course of the artery. The skin soon assumes a purple colour, and the swelling increases as long as the internal bleeding continues; and if this discharge of blood is not soon stopped, mortification of the arm ensues, and sometimes death closes the scene.

The *varicose* aneurism was first discovered and described by our learned countryman, Dr William Hunter, who bequeathed his beautiful anatomical *museum*, &c. to Glasgow university. It is occasioned by puncturing an artery which lies below a vein in the operation of blood-letting, and most frequently happens in the brachial artery, or artery of the arm. The arterial blood, in this case, rushes into the opening made in the vein, and produces the varicose aneurism; or, in other words, the vein becomes varicose, or enlarges, becomes a serpentine tumour, and often forms a plexus of knots. The vein, in this case, now pulsates like an artery, and communicates a tremulous motion to the touch, and rustling noise to the ear, somewhat resembling the hissing noise of air ejected from a syringe, and occasionally so loud during the night as to prevent the patient sleeping. The pulsation is only, however, distinct in the centre of the tumour, and the contiguous veins are more or less varicose, or, in other words, irregularly enlarged. Aneurisms occur in any part of the body except the last species, viz. the varicose aneurism, which can only take place where a vein runs over an artery.

"Aneurisms," says professor Lizars, "occur more frequently in men than in women, the former sex being more subject to those occurring in the extremities, the latter to those in the trunk, and in many individuals it is a constitutional disease. Aneurism occurs most commonly between thirty and forty years of age, and is said to attack the irritable, the passionate, the glutton, the drunkard, the debauched, the syphilitic, the mercurial, and the rheumatic. Coachmen, post-boys, postilions, soldiers, particularly dragoons, sailors, porters, labourers, and miners, are said to be most subject to it." We have not, however, sufficient data to fix so very particularly on any class, as the statistics of disease are yet miserably deficient in practical details. These classes of individuals, indeed, by indulgence in vice, appear to dispose their arteries either to calcareous depositions, or to a brittle condition, so that in the violent exertions which occur in their labours, these vessels rupture and form aneurism, in consequence of the circulation being propelled at such periods with greater force than the artery has power of resisting; but even in the ordinary circulation of such constitutions, if an artery be weakened, it is unable to resist the momentum of the blood and therefore gradually yields and dilates; and our own experience, which on this subject has been considerable, bears us out in these observations. Violent shocks or contusions, forcible pressure on arteries, the reiterated bursting of parts, the force employed in reducing luxated joints, the violence of falls, fractures, and wounds, are also causes of aneurism. The largest artery, the aorta, is, as we have already observed, most subject to this disease; the next in frequency, is the femoral, or artery of the thigh, and its continuation, the popliteal; the third is the inguinal; the fourth, subclavian, and axillary; and the fifth, the carotid. The smaller series of arteries, the radial, ulnar and tibial, are seldom attacked, with the exception of the temporal, which, from being selected for arteriotomy, or bleeding from the arteries, is exceedingly subject to aneurism. The reasons for this order are very obvious, being chiefly consequent on the impetus of blood, and the deficiency or delicacy of the adventitious tunics or coats, together with the deficiency of support by the continuous structure. To render the meaning of the two preceding sentences more clear to the general reader, aneurism is most common in the larger vessels that are most subjected to the impetus of blood, especially such as have less bony or muscular support.

With respect to the *cure* of aneurism, medicine can indeed effect little good; and the instant an individual finds aneurism existing even in a small artery, he should lose no time in reporting his case to a skilful practitioner.

The usual *treatment* consists in general and local remedies, the former being chiefly applicable to internal aneurisms, or those situated within the cavities; the latter to the external aneurisms, or those of the extremities, neck, and external parts of the head. The general remedies are abstracting blood in small quantities, confining the patient to bed, and low diet; the application of a firm compress to the tumour, with a bandage rolled from the toes upwards to the groin, for those of the lower extremities. This is also named the palliative treatment, being that of Valsalva, who was the inventor, and in whose hands, as well as others, it has succeeded. Cold astringent applications, especially tar, have been also recommended. "But in the aneurism of the extremities, there are," says professor Lizars, "many cogent objections to this. In the first place, the patient may be so reduced by the confinement, as to be unable to withstand the subsequent confinement after the operation, since in many cases it is necessary to remain quiescent in bed for three or four months, for fear of secondary hæmorrhage. In the next place, if much blood be effused, the absorbents are incapable of removing it, and inflammation, suppuration, or ulceration, or gangrene, takes place, producing great reduction of strength. Thirdly, occasionally great pain is produced by the pressure. This plan, can, therefore, only be judiciously pursued at the very commencement of aneurism."

With respect to the *treatment of the varicose aneurism*, this species appears sometimes within three or four hours after the artery has been wounded in the operation of venesection, or blood-letting, while at others not for several weeks. It has at first a circumscribed appearance, is about the size of a large walnut, with the cicatrix, or mark of the wound made by the lancet, in the centre, and has not so quickly proceeded to that varicose state we have already described as in other cases. It increases very slowly, excites little pain, producing more a sense of weight, numbness, and feebleness of the arm, and is the least dangerous of aneurisms, never rupturing spontaneously, but being liable to be converted into false aneurism, with which it is sometimes complicated, and the dangers of which we have already stated. The general treatment consists in the application of compression and bandage, wearing the arm in a sling, or keeping it in a horizontal position, or, lastly, in securing the artery, which, probably from its being the shorter means of cure, and in the hands of an expert surgeon, perfectly safe, is the best remedy.

Notwithstanding the gloomy prospect that presents itself to the subject of aneurism, there are some redeeming shades in the picture, there being no less than *five* ways in which a spontaneous cure of the disease sometimes takes place: but this can never happen in the aorta or large arteries near the heart, although Petit, a French surgeon, describes the remains of an aneurism he had discovered even of the carotid artery, which had originally been the size of an apple, and after having undergone a spontaneous cure, was found after death not larger than an olive.

"The spontaneous cure in all these five ways," say the writers in Costello's Surgical Dictionary, "is produced on the same principle, viz. the effusion of concreted fibrin within the sac, and a portion of the artery adjacent to the aneurism, and which fibrinous concretion is caused, or permitted to be formed, whenever the circulation of the blood within the sac becomes preternaturally languid. The concreted fibrin is ultimately absorbed, and the aneurismal sac and the artery from whence it originates, gradually contract, the sac becoming a fleshy tumour, and the artery an impervious tube."

ANGELICA, OR ARCHANGELICA. This plant, which derived its name from its real or supposed angelic virtues, is a native of Lapland and Iceland, but has been long cultivated in our gardens.

It rises from three to five feet in height, and has a fragrant odour, and a very warm bitterish, aromatic taste, and these qualities are equally common to the leaves, seeds and root; the latter, however, is the part chiefly used, although the stalk, leaves, and seeds, are occasionally employed. Though the plant is only biennial, Loudon says, "it may be made to continue several years, by cutting over the flower stem before it ripens into seed, in which case it immediately pushes out below." The root, too, by this plan is increased in size.

The root and seeds are stomachic and carminative, and are used in dyspepsia and flatulence, and in the belly-ache of infants. The dose for an adult is from half a dram to three, of the powder of either the seeds or roots; and for a child, the same as of anise seed. A distilled water from the seeds is likewise employed; and a spirit, which when sweetened, sometimes proves a too agreeable dram for the nervous and hypochondriac invalid. The young and tender stalks, and the root, are candied; indeed the latter, when prepared in this way, forms a safe and agreeable sweetmeat, scarcely inferior to candied ginger. It is easily prepared by boiling it in syrup, and covering it up with the same liquid. One pound of the root yields one dram of essential oil, which may be used for the same purposes as oil of anise. The root soon becomes worm eaten. It was formerly cultivated for its leaf stalks, which were blanched and eaten as celery. A few of them cut in small pieces form an agreeable addition to rhubarb or gooseberry pies or tarts.

Two pounds of the seeds bruised, and put in a still, with two gallons of water, and half a pint of rectified spirit, or French brandy, and distilling off one gallon, forms an excellent domestic cordial, which, when sweetened, may be given to children in dozes of a spoonfull when they cry from the belly-ache. A simple water is likewise distilled from the fresh leaves, but is not considered equally agreeable to that yielded by the seeds or roots. We, however, consider Angelica a plant well entitled to a place in the cottage kitchen garden, as well as in the gardens of the middle and higher classes of society.

ANGINA PECTORIS; a disease, the symptoms of which are an acute constrictory pain felt at the lower part of the sternum, or breast bone, inclining to the left side and extending to the arm of the same side, attended with great anxiety, and the same constrictory pain in the region of the heart, difficulty of breathing, tendency to fainting, and a feeling of approaching dissolution, the latter sensation more acute and severe on the patient walking up a hill or rising ground, feeling incapable of proceeding without aid. This affection sometimes comes on after a meal, or subsequent to a longer than usual abstinence, and in course of time the paroxysms recur in the night, after the first sleep. Mental anxiety, derangement of the digestive organs, flatulence and irritations, a torpid state of the bowels, and occasional spasms about the chest, are the most ordinary forerunners of an attack of this disease. The sense of constriction and suffocation, however, is different from that which takes place in asthma, being rather referred to the heart than the lungs. The pulse is not unfrequently irregular and intermitting during the fit, but in other cases there is no perceptible alteration. Angina pectoris principally attacks the male sex, and the individual is sometimes carried off by the violence of a paroxysm, which varies in length or duration from a few minutes to an hour or upwards; nay, is occasionally extended to several hours. In the latter case the disease is of a chronic form, and the fits are frequently occurring during the night, when the patient is in bed, while in the acute or more speedily fatal character of the disease, the attack occurs during the day, and most ordinarily when the individual is walking up an acclivity, as already noticed.

There is, perhaps, no disease, respecting the *causes* of which physicians have been more divided in opinion. The fact is, that it is only of late, or within a period of little more than fifty years, that this affection became recognised as a distinct disease, and the variety of appearances presented in the *post mortem* examinations of the bodies of those who have been carried off by the complaint, may, in a great measure, account for the difference of opinion that exists on the subject. Facts, however, go to prove, that the middle aged, or those who are on the after-side of forty-five years, and who are of robust and corpulent habit, are most liable to the disease, although some have found it equally common in persons of a spare habit. There can be no doubt that the gouty, rheumatic, indolent, sedentary, studious, and especially those who have been long subjected to great mental anxiety, are the most frequent subjects of angina, while there are few instances in which females have ever been subjected to its influence.

Walking, especially at a quick pace, against the wind, up a hill, or rapidly ascending stairs, after a full meal, or speaking or reading aloud in the same circumstances, are all powerful excitants of the affection.

Several continental and some American physicians, among the later Dr Chapman of Philadelphia, consider it as a nervous affection, while Dr [illegible], who, for the last ten years, has devoted considerable attention to the disease, believes that it is an expression of suffering, originating in the aorta, or vessels in the heart, and in proof of this declaration, that he has collected thirty cases of angina pectoris, in which the aorta was either thickened, or dilated, or cartilaginous, or ossified, and that he has met with only ten or twelve in which the organs had undergone no alteration; and among the latter cases he adds, there was not one which bore the character of a case incontestibly belonging to the disease.

Among the cases of inflammation of the aorta published by authors, there are probably some in which the characteristic pain of angina pectoris has not been mentioned. Dr G. thinks this depends on the fact, that the history of inflammation in the large vascular trunks has been scarcely sketched, and that greater part of the observations have been made on patients labouring at the same time under other affections.—*Gaz. Medicale*.

Subsequent observations will either overturn or confirm the truth of these opinions, but as we consider them deserving the consideration of young practitioners and students, who may consult this work, we think it right to give them a more extended publicity.

Asthma is more readily to be mistaken for this disease than any other, but a careful perusal of the article *Asthma* will enable the most inexperienced to distinguish between them. In asthma, the constrictory pain in the sternum, extending to the arm already described as symptomatic of angina pe toris, is never felt; but, on the contrary, a heavy dyspnœa, or difficulty of breathing, wheezing, and cough, which never, or very rarely indeed, ever accompanies the paroxysms of this disease.

When the disease has been preceded by other diseases of a violent kind, or when from improper treatment it has been allowed to remain unrestrained, and there is reason to fear that organic lesions exist, a very unfavourable opinion may be formed of the result. In those, however, of an otherwise sound constitution, and whose health has not been impaired by intemperance, a recovery under judicious treatment may be anticipated.

Those who are subject to this and indeed to every other affection of the heart, should studiously avoid violent exercises, mental emotion, especially anger and sudden gusts of passion, long fasting, and what is equally injurious, too full meals. Exposure of the extremities to cold, and a sudden transition from a heated to a cold atmosphere, especially after indulging in spirituous, vinous, or heating liquids, are extremely hurtful. Indeed warm punch, or toddy, are liquors that should never be swallowed in the intervals of the paroxysms of this disease. The patient should use no liquors stronger than small, spruce, treacle, or ginger beer.

As to medical treatment, especially during the fit, if the patient is of a full plethoric habit, it may be necessary to draw a large quantity of blood. A large sinapism should be applied over the whole chest, and the bowels opened by a warm carminative purgative, such as six drams of the compound tincture of senna, in a wine glass of senna tea, while at the same time an enema of assafetida, combined with half an ounce of the compound tincture of camphor, should be administered. In this case four ounces of the enema will suffice, as it should remain in the bowels till expelled by the purgatives.

In other cases where the pulse is weak, the countenance pale, and the patient of a more delicate constitution, or, it may be, the victim of intemperance, hard study, or long continued mental exertion; or if the fit is attended with a tendency to syncope or fainting, blood-letting should be avoided, but the other medical treatment recommended above, may be employed. The use of anti-spasmodics, especially valerian in the form of a mixture of half a pint of the infusion and two ounces of the tincture, may be given in doses of a fourth part daily. See *Valerian*.

ANGLESEY (*a*). The form of the island of Anglesey in North Wales is triangular, but the shores are irregular, being indented with numerous small bays and creeks. In length it extends about twenty miles from north-west to south-east; its breadth is about seventeen miles, and its superficial area is estimated at 402 square miles. This county was originally divided into three cantreds, but since the junction with England, the division into hundreds has been adopted. These are six in number, Llyfon, Maltraeth, Menai, Talybolion, Twerclyn, and Tyndaethway. These are subdivided into seventy-three parishes, and the population in 1801, was 33,806; and in 1831, 48,300. The towns are Beaumaris, a sea-port and borough, with the market-towns of Llangefni, Newborough, Llanerchymedd, Holyhead, and Amlwch. There are several ports, as Beaumaris, Amlwch, Cremyln, Dulas, Red Wharf, Maltraeth, and Holyhead. A number of small streams descend from the higher grounds, the most important of which are the Cefni, Alan, Fraw, and Dulas.

The climate of Anglesey is mild, but the vicinity of the sea renders it liable to fogs in autumn, when intermittent fevers are not uncommon. The general aspect of the country is level. The most important productions of the island, next to the agricultural, are the minerals. The rich copper and lead veins in the Parys mountain, have been a source of increasing wealth and prosperity to the island, giving employment to a large number of miners. Little coal is found here, so that fuel is dear, and the expense of working the mines considerable. A sort of green marble is found here, resembling the *verda antica* of the ancients. Besides lead and copper, silver, calamine, sulphur, zinc, and alum, are among the mineral productions. In addition to the above-mentioned sources of occupation, many persons are employed in fisheries on the coast, and in the catching of wild fowl. The herring-fishery is lucrative, though uncertain: among other fishes, the cod, turbot, sole, plaices and whiting, are abundant. Many plants, considered rare by botanists, have been found in Anglesey. Anglesey lies on the great line of communication between London and Dublin, and the packets for the latter start from Holyhead. The ferry over the Menai strait was found to be often a serious impediment to travellers, and in 1820, plans for the amelioration of the communication were proposed to a parliamentary committee. The consequence of this was the erection of a magnificent suspension bridge over the strait at Bangor-ferry, and a new line of road from thence to Holyhead.

ANISE SEED, (*a*.) *Anisum Vulgare*, or *the Pimpinella of Linnæus*. The seeds of this plant have a warm, sweetish, grateful taste, with an aromatic odour. They are carminative and aromatic, and peculiarly adapted to the case of children who are subject to flatulent colic, with pain in the bowels. Anise seeds are very effectual for relieving these troublesome affections in infants, as they act in a small dose, and are not in any hazard of inducing bad habits, or stimulating too much, as many other medicines prescribed for relieving children are almost certain to do, such as syrup of poppies, laudanum, Dalby's carminative, Godfrey's cordial, and even strong punch. Nay, all these compositions may be justly charged with the high crime of shortening the lives of infants, and some of them, even of directly poisoning them. Indeed, none of them should ever be employed without regular advice. Punch, it is true, will intoxicate the child, and cause it to sleep; but it will increase the disease, and facilitate its recurrence. The size of a pinch of snuff, or four or five grains of the finely powdered anise seed, or even as much as can be lifted on a silver fourpence or sixpence piece, may be given the child when it cries much, in a tea spoonful of breast or cow's milk, and a warm flannel applied to the abdomen. Or ten drops of the essential oil of anise seed may be dropped on two drams of refined sugar, and the sugar and oil intimately incorporated by rubbing them into a very fine powder, in a stone mortar, (or a tea cup, using a smooth-bottomed vial for a pestle) then gradually adding, while the rubbing is continued, two drams of calcined magnesia. This powder, which may be named or labelled *Sugar of Anise*, should be kept in a close-corked vial, and as much given the child as can be lifted on a sixpence, when it cries or complains of flatulence or pain in the bowels. This, too, may be given in twice the quantity when the child is costive. Anise seeds are said even to increase the milk of nurses; and "they do indeed," says Dr Cullen, "come off unchanged in it; and sometimes, by condiments of this kind given to the nurses, I have seen them so far conveyed to children who laboured under colics, as to obviate entirely these complaints." Indeed it is a fact which does not now require any proof, that the milk may be impregnated with medicinal qualities by medicines administered to the nurse. There can indeed be no harm in the nurse sprinkling her bread and butter with equal parts of sugar and powdered anise seeds occasionally, as in this way they form a pleasant carminative, especially to those troubled with flatulency, and doubtless tend to stimulate the secretory vessels, and impart a carminative property to the milk. The best stimulus which a nurse can in general employ, is moderate exercise, and a plain nourishing diet, with a contented mind, avoiding spirituous and vinous liquors.

Anise seeds have long been employed in the same form as tobacco, by smoking, in various affections of the chest, as chronic catarrh, cough, asthma, and wheezing. They are frequently ordered in conjunction with stramonium, and in other cases, with colts' foot leaves or flowers, and also singly with great benefit, especially to the aged and those not previously habituated to the use of tobacco. They tend to promote expectoration, and relieve the bronchial tubes of mucus, and they have the advantage of being both a safe and a cheap medicine.

Those, however, labouring under affections of the chest, are not to suppose that the quack nostrums so industriously advertised as balsams and elixirs of anise seeds, and other pectoral drugs, are really what they pretend to be, for they are only disguised tinctures of opium, more or less resembling the old paragoric elixir of the pharmacopeias; and whatever temporary relief they may afford, seldom fail in aggravating the disease.

In procuring anise seeds, it is well before powdering them to examine if they are free of gravel, small stones, and other impurities. The essential oil is frequently reduced; but if of ordinary strength, it will congeal even in summer in a cool shady place. There is an old and excellent formula, called *Compound Anise Seed Water*, which is prepared as follows:

Anise Seed,
Angelica Seeds, each eight ounces.
Proof Spirit,
Water, each one gallon.
Draw off, by distillation, one gallon.

This is a very elegant cordial, especially when mixed with one pint of simple syrup to a quart of the spirit. The angelica seeds greatly improve the flavour of the anise; but the liquor is apt to turn out milky unless very carefully distilled or rectified.

APPLEBY; a town in the county of Westmoreland, situated near the river Eden, on the great north road, 226 miles distant from London. It was anciently a place of much greater magnitude than at present, for old foundations have been discovered at the distance of two miles, to which the town and its suburbs extended; and a township, at the distance of about a mile, is still called the Burrals, (Borough Walls.) The town now consists of one broad street, intersected at right angles by three smaller, situated on the slope of a hill, and terminated at one end by the castle, and at the other by the church of St Lawrence. The suburb of Bongate stands on the other side of the river, and is connected with the town by an ancient stone bridge of two arches. The town is well-lighted and the supply of water is good. It is irregularly built, but many of the houses are respectable. The town-hall is a large ancient building in the principal street. The ancient cloisters, or market-houses, were pulled down in 1811, and a handsome Gothic edifice, after a design by Smirke, erected in their stead. The shire-hall, erected in 1771, adjoins the gaol, which has been lately altered, in conformity with the provisions of the recent gaol act. The castle stands on a steep and nearly wooded eminence, rising from the river. It is chiefly of early Norman, if not of Saxon origin, and is built on the site of a Roman fortress, of which only a small portion, called Cæsar's tower, now remains. It suffered much in the wars with Scotland, particularly in the reigns of Richard II. and Henry IV. The greater part of it was rebuilt by Lord Clifford, in the reign of Henry VI. The earl of Thanet is now proprietor of this castle, and it is occupied by his steward. From time immemorial, the judges travelling the northern circuit have resided here, and been entertained at the expense of the proprietor. Population of the town in 1831, 1723.

ARTESIAN WELLS; the term bestowed on springs of water, formed by perforating the earth with boring-rods, until a subterranean body of water be reached, whose sources are higher than the spot where the operation takes place. The effort which water makes to reach its own level causes it to ascend above the surface, and thus a supply of this necessary element is often obtained in districts otherwise destitute. The term is derived from *Artois*, a province of France, where water is chiefly obtained by boring.

The question as to whence Artesian wells derive their supplies is one of the most interesting connected with the subject. The vapours of the atmosphere form one of their sources. A few hours after heavy rains, the miners of Cornwall observe a considerable augmentation in the water contained in some of their deepest pits. The fountain of Nîmes, in France, throws out, when lowest, about 280 gallons per minute; but if heavy rain falls to the north-west, although at a distance of seven or eight miles, its volume is increased to upwards of 2000 gallons. The temperature, however, is scarcely changed by this great additional quantity, thus proving that it passes with great rapidity by channels situated very deeply below the surface.

The fountain of Vaucluse, likewise in the south of France, if it received all the rain which fall during the whole year, on an extent of thirty square leagues, would not obtain a supply adequate to the yearly issue which it pours forth. When it rises from its subterranean bed, it in reality forms a river; and the volume of its waters when at its lowest is estimated at 480 square yards per minute, which at times is swelled to 1494 square yards. Its mean volume is 962 square yards. This fountain, it is clear, must obtain its waters from some more abundant source than the percolation of rain-water through the pores and fissures of the earth. Its reservoirs, also, must be capable of containing a great mass of fluid, and the channels by which it flows must be large enough to contain a subterranean river.

These reservoirs and these channels are created by fractures in great areas of stratified rock occasioned by the action of a mighty power, which, at some period, has broken them in various directions. In some cases, these cavities actually withdraw from the surface considerable rivers. The Guadiana loses itself in a flat country, in the midst of a vast prairie: and when a Spaniard hears an Englishman or a Frenchman speaking of the bridges of their respective countries, he will tell them that there is one in Estremadura on which 100,000 cattle can graze. The Meuse and several other rivers in France also disappear in the same manner; some being sucked in by apertures in their bed, situated at various distances along the course of the stream. In the Austrian dominions, the river Poick pursues its course in the cavern of Adelsberg, where its waters lose themselves and re-appear several times. This cavern has been penetrated for the space of two leagues from its entrance, at which point a lake presents itself which has not yet been crossed. Humboldt mentions a cavern in South America, about twenty-five yards high, and twenty-seven of twenty-eight broad, which the traveller can penetrate for 800 yards, into whose recesses are rolled the waters of a stream above ten yards wide. The grotto of Windborg, in Saxony, is also a remarkable instance of the extent of the earth's internal communications, being connected with the cavern of Cresfield, from which it is some leagues distant.

The Artesian fountain at Tours recently presented some phenomena proving the existence of an extensive and complete line of subterranean communication. In January, 1831, the vertical tube by which the waters of this fountain ascended was shortened a little more than four yards, on which its volume was immediately augmented a third; but this sudden increase rendered the water less clear than usual. During many hours there were brought to the surface, from a depth of above 110 yards, various substances, among which were recognised twigs of hawthorn, several inches in length, blackened by their long stay in the water, —stalks and roots of marshy plants,—and seeds of various kinds, in a state which showed that they had been in the water since the harvest, and, consequently, that about four months had been spent in performing their hidden voyage. Shells, and other deposits which a small river, or stream of fresh water, leaves when it overflows its banks, were also brought up during the increased action of the fountain, proving the freedom with which they circulated at the depths below.

An instance is mentioned by M. Arago in the 'Annuaire' for 1835, of one of these subterranean rivers being reached by some workmen who were boring for water close to the Barrière de Fontainebleau, at Paris. As usual, the progress of the work was slow, but, all at once, the boring-rod descended nearly eight yards. When they attempted to withdraw it, it was evident that it was suspended in a body of water whose current was so strong as to occasion the instrument to oscillate in a particular direction.

The temperature of Artesian springs is invariably higher in proportion as their depth increases. The deepest of which we have seen any statement is near Dieppe, and is about 340 yards below the surface. A well formed near Perpignan produces about 485 gallons per minute; and one at Tours ascends more than two yards above the surface, and gives 342 gallons per minute.

In France, the waters of Artesian springs are sometimes made the moving power in corn-mills. At Frontès, near Aire, the waters of ten Artesian springs put in motion the wheels of a large mill, and act besides upon the bellows and forge-hammer of a nail-manufactory. At Tours, a well of nearly 150 yards in depth pours 225 gallons per minute into the troughs of a wheel seven yards in diameter, which is the moving power of an extensive silk-manufactory. Besides their general utility in irrigations, and for purposes of domestic comfort and salubrity, the water of Artesian springs has been specially applied with advantage for other useful objects. The workshops of M. Bruckmarm, in Würtemburg, are warmed by means of water conveyed in pipes from an Artesian spring, the temperature of whose source is considerably higher than that of the atmosphere. M. Arago also states that there are green-houses whose temperature is kept up by means of the circulation of a constant volume of Artesian waters. At Erfurt, they are used in the formation of artificial beds of cress, which produce £12,000 a-year. In the north of France, the reservoirs in which the flax is steeped which is destined to be employed in the manufacture of lace and the finer descriptions of linen, are supplied by Artesian springs, whose waters, being remarkably clear and of an equable temperature, dissolve the vegetable matter with the least injury to the most valuable properties of the plant. In fish-preserves it is often found that the fish are killed both by the severity of the winter and the excessive heats of summer; but this effect of the inequality of the seasons has been prevented at the fish-ponds of Montmorency, near Paris, by furnishing them abundantly with Artesian waters.

ASPHALTE; a species of pitchy or bituminous stone, which, in ancient times, was much used as a cement in building (see the article *Bitumen* in the body of the work), and which, of late years, has been recommended to public notice, as excellently adapted for covering floors, roofs, for flagging, and for various other useful purposes. Of its modern revivication, we have the following account in Chambers' Journal.

On examining the valley of Travers, in the Prussian province of Neufchatel, about the year 1712, an ingenious, learned, and speculative Greek, named Eirinis, discovered a fine bed of asphaltic rock, and, probably from some recollections suggested to him by his knowledge of antiquity, began to make experiments upon the value of the rock for *cementing* purposes. He describes this rock, or asphalte, as he called it, to be "composed of a mineral substance, gelatinous and calorous, more clammy and glutinous than pitch; not porous, but very solid, as its weight indicates; and so repelling the influence alike of air, cold, and water, that neither can penetrate it; it is better adapted than any other substance to cement and bind buildings and structures of every kind; preserving the timber from the dry rot, from worms, and the ravages of time; so much so, that exposure to the most inclement extremes of weather only renders it the firmer and the more enduring." Such is the account given by Eirinis of his asphaltic cement; and he also states that its efficacy and durability were tried and proved on many buildings in France, Neufchatel, and Switzerland. "Nothing (says he) can be easier than the composition of this cement," and he gives directions for melting it as it is taken from the mine, and stirring it when melted, mixing with it at the same time ten per cent. of pitch after which it is to be spread on the stone or wood to be coated, previously heated to a slight degree.

Such was the first attempt made, in modern times, to turn the natural production called asphalte to service in building. Eirinis was not supported properly, however, and the Val de Travers mines, though occasionally wrought by succeeding speculators, have only fallen into competent hands within a very recent period. Count de Sassenay, who had acquired the requisite experience by his having been for six years the proprietor and manager of the Seyssel mines, became, in the beginning of 1838, the proprietor of those of the Valley of Travers in Neufchatel. The Seyssel mines, it is to be observed, are also asphaltic, and had been wrought for a number of years. But, on examination, Count de Sassenay found the Neufchatel mines to contain a finer-grained rock, and with two per cent. more of bitumen in it, than the Seyssel mines. He was therefore led to become the purchaser of the former, and has established a company at Neufchatel, with a capital of forty thousand pounds, for the working of asphalte, and for its sale in the various countries around.

Count de Sassenay states, in the Introduction to a little pamphlet which supplies us with these particulars, that there are two kinds of mineral matter which go by the name of asphalte, though erroneously so. The first is an earthy concretion of gritty, loose texture, to which the count gives the name of *bituminous molasse*, and which he ascribes to the latest or tertiary formation of rocks. The other substance is the true asphalte, which is solid, of the colour of soot, and is an admixture of bitumen with calcareous or limestone rock of the Jura formation, which belongs to the secondary era. The bitumen is here completely combined or amalgamated with the calcareous material, and this union is productive of a new homogeneous substance, which *alone is the true asphaltic cement*, or asphalte. Bituminous molasse is a mineral substance comparatively abundant on the continent, and has been wrought in several places with the view of making the same cement, but has not undergone that natural admixture with calcareous matter which constitutes the true asphalte, and hence such views have not been realized. This is not only stated by Count de Sassenay, but by M. Rozet, M. H. Fournel (a noted engineer), and other observers. "Many experiments have been made to imitate the cement we have mentioned (that of Seyssel); but in these operations the want of the calcareous matter has been attempted to be supplied by substances, which, absorbing the bitumen, produce a composition which cannot resist the influence of heat or cold, but is melted by the sun and cracked by the frost." The Val de Travers, where are found the finest kinds, as has been said, of this natural production, formed in all probability under strong volcanic action, leads into the Lake of Neufchatel. Half way up the mountain-sides, the asphaltic works are carried on. "The operations," says M. Fournel, "are very simple, and consist merely in blasting the rock. The cavities for the powder are perforated by wimbles of about thirty-nine inches in length, one of which a man can work as he would a carpenter's auger. This manner of boring appears to be applicable only to the asphaltic stone. The labourers can work better in winter than in summer; because the rock being harder and more condensed in cold weather, the powder has more effect and the blasting is more extensive." The rock is in blocks or irregular masses, not in strata, and there is reason to believe that the whole mountain is of asphalte. The manner of preparing the rock for cementing purposes is this. "Ninety-four parts (weight) of the asphaltic stone, *pulverised*, are mixed with six parts of bitumen, and melted down in large boilers; and the mass is then poured off and formed into rectangular cakes, which are sold as the asphaltic cement." It is easily re-melted, and instead of losing, gains quality by the repetition of the process. Of late, however, the plan has been adopted of sending the stone itself to the place where it is to be used, and there melting and mixing it with the tar immediately before use. This saves one melting. The way of using it requires little explanation. When melted, the cement is merely spread over the desired part equally and in such thickness as circumstances may require. In the coating of places to be trodden much, such as footways, terraces, slabs, &c. it is customary to mix fine river sand with it, which gives it more stability, and a degree of roughness that is not unnecessary.

We have now to ask if the asphaltic cement has been extensively tried, and with what success. Count de Sassenay, when proprietor of the Seyssel mines, obtained permission to use the cement in the fortifications of Vincennes, Douay, Grenoble, and Besançon. The minister of war was satisfied by the experiment that it would be highly advantageous to have the roofs, floors, &c. of barrack-rooms coated, both on the score of cleanliness (inasmuch as the cementing was easily washed), and on account of the protection against damp afforded by it. It was also found that rats and mice disappeared where the cement was laid down. On these facts being ascertained, the French minister of war contracted for the use of asphalte in the various buildings over which he had control. The extensive commissariat magazines at Berry, and those which supply the garrison of Paris, the walls, ceilings, and floors of the detached forts at [illegible], the arsenal at Douay, the new barracks at Perpignan, those at Mont Louis and other places, were all supplied with asphaltic coatings, in whole or in part. Asphalte was also substituted for the stone pavement in some of the cavalry barracks. The unwearability of the material rendered these experiments most satisfactory. [A staircase, coated with the cement by Eirinis more than a hundred years ago, still remains, and is unmarked, whereas contemporary *stone* stairs in the same building are hollowed out by foot-marks.] The ministers of the Marine and of the Interior in France followed the example of the War Minister, and coated their convict-prisons and other edifices with the asphalte, and with equal satisfaction.

These things passed very recently—subsequently, indeed, to the year 1832—when Count de Sassenay became proprietor of the Seyssel mines, from which the asphaltic cement was procured for the purposes mentioned. It was not till 1835 that any experiment was made upon the use of asphalte for flagging thoroughfares. At that time the footway of the Pont Royal was coated with the cement, and its durability, under the tread of [illegible] thousand people daily, has amply justified the trial. Since that time, the footway of the bridge [illegible]

Carousel, the footway by the railings of the Tuileries, other footways, and the basin of the fountain in Richelieu Street, have been coated with the asphaltic cement, and it has been found to stand equally well the "summer's heat and winter's snow." The Belgians have begun also to use the article extensively in public works. In several parts of London, portions of the street for foot passengers have also been laid with asphaltum, by way of experiment, and on a late inspection by us, it seemed to answer all the purpose of flag-stones. Various artificial cements, in imitation of the natural asphaltic, have been brought before the public, but, on trial, they have been found to crack in winter and to melt in summer—in short, to be totally inefficient in comparison. The asphaltic cement has been used with success in joining stone to stone, or metal to stone. As for its use in the caulking of vessels, we are not aware what has been the result of recent experiments on this point. The induration which forms its chief value in coating pavements and such places, might be injurious in the case of vessels, but an additional proportion of tar to the cement would probably amend this fault, and render it useful there also.

ASSASSINS. This term, applied in Europe to a secret murderer, had its origin in the name of a celebrated Mahommedan sect, who long devastated the east. Under the head *Ishmaelites* (another of their names) we have given a brief account of the sect, but we propose to enter here somewhat more largely into the subject, following the work of M. Joseph von Hammer, a German author, who, from sources purely oriental, has thrown much interesting light upon it. See Foreign Quarterly Review. vol. I.

In the stormy period which succeeded the death of Mohammed, numerous sects sprang up among the believers of Islamism. One of these, the Mazdekee, professed universal freedom and equality, the indifference of human actions, and the community of goods; and, strange as it may appear, it numbered among its adherents Cobad king of Persia. The imprudence of this monarch cost him his crown, and his son Noosherwan, convinced of the pernicious influence of the sect, endeavoured to eradicate it with fire and sword. In this attempt he did not completely succeed, and the immoral opinions continued to exist in secret, until an opportunity offered, when they were again publicly promulgated, and Persia became the scene of blood and devastation.

At this period there lived at Ahras, in the south of Persia, a man named Abdallah, who had been educated in the maxims of the ancient religion and policy of Persia, and whose national animosity induced him to attempt the overthrow of the faith and the empire of the victorious Arabs. The only path to ultimate success, he saw, was to undermine them by secret means; and to effect his purpose, he enveloped his design in the veil of mystery, and in imitation of the schools of India and Pythagoras, communicated gradually his doctrines to his disciples. These consisted of a denial of all religion, with the belief that all actions are indifferent, and that neither here nor hereafter will they be rewarded or punished. With the greatest zeal, by means of missionaries, he disseminated his opinions, and augmented the number of his disciples, until at length one of them was placed on the throne of Egypt, and the new system was established in Africa. But it contemplated farther triumphs, and its missionaries overflowed Asia, in the hope of overturning the throne of the caliphs of Bagdad. Lodges of men and women were formed in different places, and the principles of the sect were taught in regular succession, according to the progress made by the members, or the confidence placed in their discretion. To believe nothing, and to dare every thing, was the sum and substance of this doctrine.

One of the converts to this system was Hassan ben Sabah, who founded, some years after, the society which, during a century and a half, filled Asia with terror and dismay. Hassan was one of those characters which appear from time to time in the world, as if sent to operate some mighty change in the destinies of mankind. Endued with mental powers of the first order, conscious of his own superiority, filled with the most immoderate ambition, and possessed of the courage, patience, and foresight requisite for the accomplishment of his deep-laid schemes, he had been sent by his father, whose orthodoxy was suspected, to Nishaboor, to be educated by one of the most learned men of the East; and there he formed an acquaintance with several noble youths, who afterwards raised themselves to the highest dignities of the state. Even at this early period, the ambitious mind of Hassan, and his sanguine expectations of future advancement and dignity, displayed themselves, and he was not long of seeing them realised. He was taken notice of by the Sultan Melek Shah, and was soon after made his principal confidant. By one of those intrigues common in courts, he was, however, in a short time deprived of the favour of his sovereign, and was dismissed with disgrace. Burning with rage and disappointment, he retired to Rei, and thence to Ispahan, and after a short stay there, he proceeded to Egypt, to join the grand lodge of the Ismaelites, a name which the secret society had assumed, and of which society he had for a long time been a member.

Hassan, whose fame had preceded him, was received in Egypt with the highest honours; but soon after, happening to take an active part in a dispute relative to the succession, his enemies prevailed against him, and he was sent into banishment. He disembarked in Syria, and spent several years in travelling in the different nations of the East, zealously spreading his doctrines, and acquiring proselytes. His ambition now was to possess dominion as well as power, and he fixed his eye on the castle of Alamoot (the vulture's nest), a lofty and impregnable fortress in the district of Roodbar, to the north of Kasveen. This he gained partly by force, and partly by stratagem. So soon as he got possession of this hill-fort, Hassan changed his plans, and instead of publicly treating all religious belief as the effect of a disordered imagination, he determined to maintain among his followers the religious discipline of Islamism in all its rigour. The most minute observance of the most trivial ordinances was exacted from those who, generally unknown to themselves, were leagued for its destruction; and the veil of mystery behind which few were permitted to enter, shrouded the secret doctrine from the eyes of the major part of the society.

The Ismaelite doctrine had hitherto been disseminated by missionaries and companions alone; a third class was required, which, ignorant of the secret doctrine, would blindly obey the orders of their superiors. This class was named Fedavee, or the Devoted. The members were clothed in white, with red bonnets or girdles, and were armed with daggers. These were the men, who, reckless of their lives, executed the bloody mandates of the Sheikh-el-Jebel, the title assumed by Hassan. As a proof of the fanaticism which Hassan contrived to instil into his followers, we give the following instance. In the year 1126, Hasim-ed-devlit Absoucar, the brave prince of Mosul, was, as he entered the mosque, attacked by eight assassins disguised as dervises; he killed three, and the rest, with the exception of one young man, were cut to pieces by the people; but the prince had received his death-wound. When the news spread that Hasim had fallen by the daggers of the assassins, the mother of the youth, who had escaped, painted and adorned herself, rejoicing that her son had been found worthy to offer up his life to the good cause; but when he returned the only survivor, she cut off her hair and blackened her face, through grief that he had not shared the glorious death of martyrdom.

A display of the means by which the chief of the Assassins succeeded in infusing this spirit of unbounded faith and devotion into his followers, forms an interesting chapter in the history of the human race. Those who reflect on the follies of the disciples of the various fanatics and impostors who have deceived mankind, will not be surprised at the blind devotion of the Fedavee. Even in our own days, the chief of the Wahabees could persuade his followers that he had it in his power to dispose of the mansions of eternal bliss.* It is not undeserving of remark, that the two powers which waged war simultaneously upon Islamism, were both stimulated, by their spiritual heads, with the same prospects of reward. Those who fell in the crusades were pronounced by the Pope to be martyrs, and entitled to the kingdom of heaven; and to the Fedavee who fell in executing the mandates of his superior, the gates of paradise were thrown open, and he entered into the enjoyment of the ivory palace, the robe of silk, and the black-eyed houries. This, it is said by Marco Polo, was no ideal reward. At Alamoot and Masiat in Syria were the most delightful gardens, into which the young novice was, while in a state of stupefaction, the result of some narcotic, introduced; and there, amid a succession of pleasures, presented with a foretaste of the joys of a Mahometan paradise. Ever after, the rapturous vision possessed the imagination of the deluded enthusiast, and he panted for the hour when death, received in obeying the commands of his superior, should dismiss him to the bowers of the celestial paradise.

Here we have the true origin, according to De Sacy, of the term Assassin. Hyde derived it from Hassa, to kill; others from the Jewish Essenes; the prevailing derivation, which is also adopted by Sir John Malcolm, is from Hassan, the first chief; Lemoine was nearer the truth when he derived it from a word signifying herbage, and consequently garden; but, according to De Sacy, whose opinion is adopted by Von Hammer, the true root is hashish, which signifies the bangue, or opiate of hemp leaves; and that the Assassins obtained their appellation from the use they made of the opiate prepared from that plant.

The power of the order now began to be exhibited. By force or by treachery, the castles or hill-forts of Persia in succession fell into their hands. A bloody period ensued; the doctors of the law excommunicated the adherents of Hassan, and the Sultan Melek Shah gave orders to his generals to reduce their fortresses; the daggers of the Assassins were opposed to the swords of the orthodox, and the first victim to Hassan's revenge was the companion of his youth, the great and good Nizam-al-mulk, the prime minister of the sultan, who fell by the dagger of a Fedavee. His death was followed by that of his sovereign, who was suddenly carried off, not without strong suspicion of poison.

At the period of the crusades, the Assassins appeared in Syria, and, by means of Riswan, prince of Aleppo, acquired fortresses in that country. In Syria, as in Persia, they were persecuted and massacred, and there, also, the dagger amply avenged those who fell by the sword. After a protracted contest in Persia, a dagger was one morning found stuck in the ground by an unknown hand, at the head of the Sultan Sanjer. This reminded him of continued enmity, and induced him to seek for peace. A treaty was in consequence entered into between the Sultan and the sheikh of Alamoot. The Ismaelites agreed on their part to add no more to the strength of their forts, to purchase no arms or military machines, and to make no more proselytes, and the Sultan released them from certain taxes, and assigned them a portion of his revenue as an annual pension.

After a reign of thirty-five years, Hassan ben Sabah saw his power extended over a great portion of the Mohammedan world. Three grand missionaries presided over the three provinces of Jebal, Cuhistan, and Syria, while, from his chamber at Alamoot (which apartment he left but twice during his long reign), Hassan directed the operations of his followers, and employed his leisure hours in drawing up rules and regulations for the government of the order. He died at a very advanced age, leaving no children, for he had previously put both his sons to death, the one for the crime of murder, and the other for trespassing some trifling precept of the Koran. When he felt the approach of death, he summoned his two superintendents, Keah Buzoorg and Abou Ali, before him, and appointed them his successors; Buzoorg to direct the civil and military, and Ali the spiritual affairs of the order.

Buzoorg trod in the footsteps of the founder of the order. Hostilities were renewed between him and the Sultan, and Alamoot fell for a time into the hands of the enemy. But the power of the order had taken too deep root to be easily overthrown, and it soon recovered from its disasters. In Syria, too, though violently opposed, it extended its influence, and it was thus situated when the crusaders first came in contact with its followers. Their first approaches were of a friendly nature, for we find that Aboul Wefa, the Ismaelite Grand Prior, as we may call him, and at the same time chief judge of Damascus, entered into a treaty with Baldwin the Second, king of Jerusalem, to deliver Damascus into his hands, on condition of receiving the city of Tyre as his reward. The enterprise, however, failed; the governor got timely information of the plot; the vizier, the great friend and protector of the Assassins, was put to death, and an indiscriminate massacre of the Ismaelites took place, in which 6000 fell victims.

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* A follower of the modern Wahabee, who, a few years ago, stabbed an Arabian chief, near Bassora, not only refused to save his life, but anxiously courted death, grasping in his hand a paper which he seemed to prize far beyond his existence. This when examined proved to be an order from the Wahabee chief, for an emerald palace, and a number of beautiful female slaves, to be given him in the delightful regions of eternal bliss.

Buzoorg departed from the maxims of the founder, by appointing his son Mohammed as his successor. He was a weak and inefficient prince, but his son and successor, Hassan the Second, was of a more enterprising character. His vanity induced him, contrary to the prudent counsels of the founder, to set himself up as a teacher and illuminator, and by his foolish disclosures of the mysteries of his sect, he justified the curses of the people, the excommunications of the church, and the persecution of the order by the surrounding sovereigns. He was, after a short reign, murdered by his brother-in-law and his son Mohammed, who succeeded him. This prince rivalled his father in knowledge, and in the open disregard of all religion and morality. At this period, when the brave Saladin and the crusaders maintained a bloody war in Palestine, the grand prior of the Assassins was Sinan, one of those personages who have at various times in the East gained, by an extraordinary appearance of austerity and devotion in the eyes of the credulous multitude, the reputation of divinity. He gave himself out to be an incarnation of the deity; wore no clothing but sackcloth; was never seen to eat, drink, or sleep; and, from sunrise to sunset, preached from the top of a lofty rock to the assembled multitude, who listened to him as to a god. Notwithstanding the risk he ran, on one occasion, of being murdered by his followers, who discovered him to be only a mere mortal, he retained his influence over them during his life, and at present his writings are held in high veneration by the remnant of the sect which still lingers in the mountains of Syria.

Sinan had read the books of the Christians, and whether from conviction, or, what is more probable, from a wish for peace and exemption from tribute, he sent an ambassador to Almeric, king of Jerusalem, offering, in his own name, and in those of his people, to submit to baptism, if the Templars, their near neighbours, would remit the annual tribute of 2000 ducats which they had imposed on them, and live together in future in peace and amity. The king received the embassy with joy, agreed to all the conditions, offered to reimburse the Templars from his own coffers, and, after having detained the envoy and his suite some days, dismissed them with guides and an escort to their own frontiers. But as they approached their castles, Walter of Dumesnil, who, with a body of Templars, had lain in ambush, assaulted them, and in the fray murdered the ambassador. Almeric, incensed at this treacherous and cruel action, assembled the princes of the crusade, and, by their advice, sent to demand satisfaction of the grand master, Odo de St Amande. The haughty priest gave an evasive answer, which so enraged the king, that he ordered the murderer to be dragged from the habitation of the Templars, and thrown into a prison in Tyre. The perfidious grand master was himself soon after made a prisoner by Saladin, and in the same year perished unlamented in a dungeon. Almeric had no difficulty in exculpating himself in the opinion of Sinan; but all hopes of the conversion of the Assassins were now at an end, and the dagger, after a truce of forty-two years, was again brandished against the crusaders.

Its most illustrious victim was Conrad, marquis of Tyre and Montferrat, the guilt of whose death, both oriental and occidental writers agree in ascribing to the gallant Richard Cœur de Lion. Conrad was attacked and murdered in the market-place of Tyre, by two of the Assassins. The king of England was known to be his enemy, and Albericus Trium Fontium says expressly that the murderers were hired by him. Bohadin, the Arabic historian, thus writes:—"The marquis went to visit the bishop of Tyre. As he was going out, he was attacked by two Assassins, who slew him with their daggers. When taken and stretched on the rack, they confessed that they had been employed by the king of England. They died under the torture." He also observes, that nothing could be settled with Richard, "because he always broke off what he had arranged, by continually retracting what he had said. May God curse him!" Cœur de Lion, however much his countrymen may have wished to make him appear so, cannot we are sorry to say, be declared innocent of the murder of the marquis. We shall not, however, insist upon this point, which has proved a subject of no little dispute, but only revert to the curious circumstance, that we should be beholden to an Arabic author for the knowledge of certain points in the character of a king of England.

The reign of Jellal-ed-deen, who succeeded his father Mohammed, was a period of repose for Asia. He directed all his efforts to restore religion and piety; sent circular letters for this purpose to the caliph and sultan, and other princes; was dignified by the doctors of the law, who were convinced of his sincerity, with the appellation of New Mussulman, and obtained from the caliph the title of Prince, which had never been granted to any of his predecessors. His harem made the great pilgrimage to Mecca, and the caliph gave precedence to his banners over those of many other princes. But his reign was too short to be productive of much benefit to mankind, and on his death, occasioned by poison, the dagger was again unsheathed by his kindred, at the command of his son, Ala-ed-deen, a boy of nine years of age, and the murder of the prince was avenged amid torrents of blood.

Ala-ed-deen, after a disastrous reign, was murdered in his turn, and was succeeded by his son, Roken-ed-deen, who had joined in the conspiracy against him. In his time, the caliph of Bagdad and other princes invoked the mighty Mangoo Kaan to rid the earth of this band of murderers, who rendered life wretched to those who dared to provoke their resentment, and the conqueror of the world gave orders to his brother Hulagoo to exterminate the hated race. His orders were obeyed. The treachery of the chief astronomer and vizier of the Assassin prince facilitated the operations of the Tartars; Alamoot surrendered, and Roken-ed-deen was brought a prisoner to the camp of Hulagoo. The other fortresses of the order followed the example of Alamoot, except Kirdeoo, which for three years resisted the efforts of the Tartar troops, when it fell into their hands. Orders for the indiscriminate massacre of the Assassins, wherever found, were given by Mangoo, and, without distinction of age or sex, they fell by thousands beneath the sword of justice and of vengeance. Fourteen years afterwards, the Syrian branch was destroyed by Bibars, the great Mameluke sultan; and though the sect, like the Jesuits, still clung together, in hopes of once more attaining to power, the opportunity never presented itself. The merchants and peasants who at this day still hold the speculative opinions of the order, are scarcely aware of the bloody part it once enacted on the theatre of the world.

ASSAYING. (*a*.) This process has been very much improved of late years, chiefly by the labours of Gay Lussac in Paris, who turned his attention to it when made master of the mint. The method formerly employed has been explained in the article in the body of the Encyclopedia, under the same title. Its disadvantages, as applied to silver, were the length of time taken in the operation, and its not affording a sufficiently accurate result. The cause of the inaccuracy is, that when silver fuses in contact with air, it absorbs a considerable quantity of oxygen, with which it parts again at a lower temperature. This frequently causes a spirting, and consequent loss of material. The workman was long familiar with this phenomenon of the spirting of the metallic button, but the true cause of it was but comparatively recently discovered. The oxygen is not supposed to be in a state of chemical union with the silver in this state; that is, no oxide of silver is formed, but the oxygen is supposed to be in a state analogous to that in which it exists when in platinum sponge. (See *Absorption*, Supplement.) Another cause of failure arose from the aptitude of a little silver to sink into the pores of the cupel. From these causes, the differences in two trials made with the same silver often amounted to $\frac{1}{3}$ p. c. notwithstanding all the care and attention which could be bestowed on the process. Where the operator was not very careful, the error amounted even to $\frac{2}{3}$, or $\frac{8}{10}$ of a percentage. This uncertainty was particularly felt where the alloy contained from 50 to 90 p. c. silver. In the cases of purer, and also of more adulterated alloys, the process by cupelation gave pretty uniform results. But it is exactly silver of the above content that is most frequently submitted to analysis.

The plan now had recourse to is at once simple and effective, and has proved of immense service in the arts and manufactures. Formerly, from the imperfect state of analysis, manufactured silver articles which should contain by law a certain percentage of silver, were generally made somewhat richer, in order to avoid all risk of collision with the law. The loss sustained in this way, in Paris alone, used to be enormous. Such precautions are now unnecessary. The mode of analysis followed is all but perfect, and the true percentage in silver of the article analysed can be determined with the utmost accuracy. Gay Lussac's plan consists in dissolving a certain weight of the alloy in pure nitric acid, and measuring exactly the quantity of a solution of common salt of known strength, that is, required to precipitate the whole silver in the form of chloride of silver, which is quite insoluble in water and dilute acids. The content in silver is not estimated by the weight of the precipitated chloride of silver, but according to the measure of the solution of salt that is found necessary. It is known that the silver is entirely precipitated when, on the addition of another drop of the solution, no milkiness is produced. In a solution weighing 1000 grains, a quantity of silver, amounting to the $\frac{1}{100}$ of a grain, causes a distinct milkiness; and if the solution be allowed again to clear itself, the precipitation of the $\frac{1}{400}$ grain may still be observed. The milky solution should be strongly shaken a minute or two, when in a few seconds it becomes clear enough to admit of any further precipitation being seen. If we suppose the quantity of alloy operated on to be 10 grains, the exact quantity of common salt necessary to precipitate 10 grains of pure silver should be dissolved in a vessel graduated to 1000 parts. It will be obvious, that whatever part of the 10 grains be silver, must be indicated by the measure of the solution that is required before an additional precipitate cease to be formed, when a drop of the solution is added. The presence of lead, copper, or other metals, does not alter in the least the quantity of common salt required. In the manner above described, a much greater degree of accuracy is attained than is possible by the process of cupelation, and where many trials are made much time is spared. The chloride of silver which is precipitated, is not thrown away, but is reduced, by bringing it well washed in contact with pure muriatic acid, and iron, or zinc; chloride of zinc or iron is formed and dissolves, while silver, in the metallic state, remains.

The process for assaying gold has been so imperfectly described, that it may be well to add here a short additional description of the process really employed. The piece of gold is first tried with the needles and test-stone. These needles are composed of different alloys of gold with silver and copper. The test-stone is a variety of black-slate. A streak is first made with the alloy, to be tested by rubbing it upon the test-stone, and beside that, another streak with a needle, the composition of which is known, and which is supposed to be nearest that of the alloy under examination. If the streaks resemble each other in colour, to determine which a considerable amount of experience is required, the alloy is supposed to have the same composition. When by these means the composition of the alloy is approximatively determined, it is hammered out into thin sheets, and mixed with 3½ times as much pure silver as there is of gold; and to this mixture is added three or four times its weight of lead, and the whole fixed together in a cupel. The gold and silver remain behind, the copper is oxidated and sinks into the pores of the cupel, along with the lead. The gold is then separated from the silver by solution in nitric acid. For the success of this operation, it is essential that the gold amount to about ¼ of alloy of gold and silver, as in this case the gold that is left retains the form of the alloy, and can be readily taken out, washed with pure water, and weighed.

ASTORIA; the name given to a small fort, or trading post, formed by Mr Astor, at the mouth of the Columbia river, as a settlement for fur traders belonging to the company which he undertook to establish. One of the main objects in this commercial enterprize was to establish a company of traders belonging to the United States, as a rival to the great North-West Company, the Mackinaw Company, and other associations belonging to Great Britain, and thus to cause the traffic in peltries, and the wealth arising from it, to centre in New York. On the breaking out of the war between Great Britain and the United States, Fort Astoria fell into the hands of the British, and the trade in peltries was forthwith engrossed by the North-West Company and other associations. See Washington Irving's interesting work, entitled "Astoria."

ASTRABAD. See *Persia*, in Supplement.

ATHLONE; a town of Ireland, situated on both sides of the Shannon, fifty-nine miles west from Dublin. It is conjectured that Athlone is only a corruption of *Ath-Luain*,—Moon Ford, or Ford of the Moon. The portion of the town which lies on the eastern bank of the Shannon was termed English Town, and is situated in the county of Wes-meath and province of Leinster; that on the western bank was termed Irish Town,—it was the part most strongly fortified, and is situated in the county of Roscommon and province of Connaught. On the Connaught side of the river there is a castle, said to have been erected, or at least enlarged and strengthened, by King John. This castle, which has been re-edified in a modern style of fortification, commands the bridge which connects the town,—was once the residence of the lord-presidents of Connaught, and has been the scene of stirring events. The bridge was built, in the reign of Queen Elizabeth, by Sir Henry Sidney, Lord Deputy of Ireland, and has survived the accidents of war, as well as the wear of time and traffic. It is only twelve feet wide; and being the highway from Connaught into Leinster, it is a great thoroughfare, and is often disagreeably thronged. In the centre of the bridge is a stone monument, bearing an inscription, nearly obliterated, setting forth that, "in the ninth year of the reign of our most dere soveraign ladie Elizabeth, this bridge was built by the device and order of Sir Henry Sidney, knt., who finished it in one year, by the good industrie and diligence of Peter Levis, clk., Chanter of the Cathedral Church of Christ, Dublin, and steward to said deputy."

The town of Athlone was incorporated by charter from James the First, and received a further charter from Charles the Second. What chiefly renders the town of importance is its being a station, or government depot for troops and military stores. There are barracks for the reception of 2000 men, to which an ordnance-yard, magazines, and hospital are attached. Some trade is carried on by means of an extensive brewery and two distilleries, and by the manufacture of felt-hats. Markets are held three times a week. Athlone is well situated for trade. The Shannon is navigable for thirty-eight miles farther up than the town; the navigation, which is interrupted by the bridge and ford, being continued by means of a canal, cut on the Connaught side of the river, by which also the distance is shortened, as the Shannon makes here a considerable sweep. The Grand Canal, also, which communicates with Dublin, joins the Shannon seventeen miles below Athlone. Population in 1831, 11,406.

AUSCULTATION, AND PERCUSSION, in medicine; terms applied to the methods used to ascertain the seat and nature of disease, by the signs which may be recognized by the sense of hearing. They comprise the study of all sounds indicative of disease, whether heard by the unassisted ear, or through the medium of instruments, and whether arising naturally, or produced artificially.

From the earliest ages, physicians have known that disease in the cavity of the chest might occasionally be detected by the ear; but it was not till about seventy years ago that any express rules were laid down upon this subject. The merit of being the first methodical auscultator is due to Dr Avenbrugger, a physician of Vienna, who published a short treatise on this subject in the year [illegible]. It is written in Latin, and is entitled, "A New Discovery of the Art of Detecting Diseases by the Interior of the Chest by Percussion." When the chest of the patient is struck by the fingers of the physician, if it is healthy, it gives a sound, says Dr Avenbrugger, like that of a drum covered with cloth; whereas, if it is diseased, the sound produced is as if solid flesh had been struck. In performing this examination, the chest of the patient must be covered with his shirt, or else the fingers of the physician with a glove, which must not be made of glossy leather; for if the bare chest is struck with the bare hand, the concussion of smooth surfaces produces an external sound which obscures the internal one. The following general rules are clear, correct, and well-expressed:—

The duller the sound is over the chest, and the nearer it approaches the sound of solid flesh, the greater is the disease.

The larger the space over which this dulness extends, the greater is the disease.

It is worse for the left side to be affected than the right.

It is less dangerous that the front and upper part of the chest (viz., from the collar-bone to the fourth rib) should be destitute of sound than the lower part.

If one side of the chest is entirely destitute of sound, it is a fatal sign.

If the sternum (viz., the front and central part of the chest) is without sound, it is a fatal sign.

If the place which the heart occupies gives the sound of solid flesh over a great space, it is a fatal sign.

Dr Avenbrugger's little manual is not confined solely to the signs afforded by percussion; in many instances he gives a succinct but masterly outline of the general symptoms by which various diseases of the chest may be recognized. In offering his work, the fruit of seven years' observation, to physicians, he remarks, that, in treating diseases of the chest, the sound obtained by percussion is inferior in importance only to the pulse and respiration. Avenbrugger's work has never been translated into English; but there is a French version of it by Corvisart, in which the brief axioms of the German physician are illustrated, and almost overwhelmed, by a most copious commentary. This translation, however, is a valuable work, and an additional step in the art of auscultation. With this exception, but little advance seems to have been made from Avenbrugger to Laennec, the distinguished inventor of the stethoscope, (see *Stethoscope*, in the body of the work.) This is a tube, usually made of wood, one end of which is applied to the chest of the patient, and the other to the ear of the physician. By this contrivance, the sound of the patient's respiration, as well as voice, is transmitted in the most distinct manner, and the minutest variations from the healthy standard can be distinguished by a practised ear. In children, for instance, the sound produced by respiration is louder and more acute than in adults; but this acute breathing often occurs in grown-up persons, when, one lung being diseased, the other is forced to do work for both. It is known among stethoscopists by the name of *puerile* respiration. Or, let us suppose a patient in an advanced stage of consumption, in whose lungs cavities have been formed by the suppuration of tubercles; if the stethoscope be applied to the chest of such a patient when he is speaking, his voice will be heard echoing from the cavities in his lungs: this morbid resonance is called *pectoriloquy*.

The principle, on which auscultation and percussion are applied to the detection of disease, is sufficiently plain. Indeed, it is often used in the common affairs of life. The carpenter strikes his hammer against the wall, to ascertain where to drive his nail "in a sure place." The spirit-dealer knocks upon the head of his cask, to learn the quantity of liquor contained in it. With precisely the same view, the physician thumps the chest of his patient, that he may judge of the state of the organs by the sound which is given forth.

The chest is an enclosed cavity, containing, and in the natural state filled by, several organs of different degrees of density. Of course, the part corresponding to each organ gives a dull or a resonant sound, according as the organ is firm and solid, or light and porous. Much the greater portion of the chest is occupied by the lungs. They are of a light and spongy texture, partly filled with blood, and partly with air. The sound they emit is intermediate between that of an empty cavity, or one filled with air only, and a collection of fluid, or a solid organ. In the neighbourhood of the lungs is the heart on one side, and the liver on the other, both solid organs; the latter, indeed, not strictly in the same cavity, but capable of pressing upon the others. If either of these is increased in size, so as to encroach upon the lungs, the existence and the extent of the encroachment will be shown by a flat sound in the place of the natural resonance.

If the membrane which lines the cavity of the chest becomes inflamed, a fluid is gradually poured out into the cavity, compressing the lungs, and occupying their space; and then a flat sound is the consequence. Or, the same space may be filled by air, introduced either by a wound, or as the effect of disease; and then the sound on the other hand is unnaturally resonant. The structure of the lungs itself is also liable to be changed by disease. On the one hand it may be *emphysematous*, too much distended by air, when the sound is hollow. On the other hand, it may be rendered unnaturally solid, either by a pressure of blood, or by inflammation, or by the formation of tubercles; either of which will cause the sound to be dull or flat in proportion to the extent of the disease.

It is not our purpose to go into particulars, and show how all the several affections are distinguished from each other. Such details belong to the physician, and must be studied by him with industry and care. The distinction is made partly by other considerations, and partly by differences in the percussion itself. We may give an example by way of illustration, of the extent to which this mode of investigation may be carried. We have said, that fluid in the chest, congestion of the lungs, inflammation, and tubercles, all cause a flat sound. How shall we know one of these from the rest? The formation of tubercles is a slow process, and the disease they produce is chronic; and it is attended by circumstances quite unlike those which ordinarily accompany the others. For this reason there can generally be little question between them. But this is not all. Tubercles are almost always first deposited in the upper portions of the lungs, while inflammation as generally occupies the middle and lower portions. In any case, therefore, where the disease has not advanced so far as to leave no room for doubt, if the flatness be in the upper part of the chest, the presumption is strong in favour of the existence of tubercles; if in the lower part, it is something else. In like manner, a crowded state of blood in the lungs is ascertained, chiefly by means other than those we are now considering. Between a collection of fluid in the chest, the result of acute inflammation of the lining membrane, and inflammation of the lung itself; that is, between pleurisy and pneumonia, the distinction is not so easy. Both are acute diseases; and both give rise to many of the same symptoms. Indeed, so much alike are they in these respects, that it was formerly said to be impossible to distinguish them. Yet the importance of their effects is widely different. The one is a grave disease and often destroys life, the other is rarely fatal. And the treatment required by each is often very unlike. Here, too, we are by no means restricted to the use of percussion. Other modes of examination serve to explain, or correct, or confirm, as the case may be, the results of this. But we must show what this can do.

We have seen that, in pleurisy, the flatness of sound is caused by a fluid poured out into the cavity of the chest, taking the place of a portion of the lung. The flatness is consequently complete so far as the fluid extends, and there stops abruptly. In inflammation of the lung the condensation, and the consequent flatness, are complete only at the part most highly inflamed, and diminish by a more or less gentle gradation towards the healthy portion. This flatness, too, is constantly observed in the same place, whatever may be the position of the body, whereas in pleurisy every movement of the body causes the fluid to flow to the lowest part, and consequently changes the seat of the flat sound. These different circumstances are not always enough of themselves to establish a perfect diagnosis between the two diseases. But they go far towards it; and, taken in connection with the results of the other principal mode of exploration, they rarely leave any just cause of doubt between them.

In detecting diseases of the heart, percussion, regarded by itself alone, will do little more than to point out an enlargement, without showing its precise character, or whether it be an enlargement of the heart itself, or a distention of the pericardium by a fluid. There are other means of making these distinctions, with a greater or less degree of certainty.

The organs of the abdomen are less concealed from observation than those of the chest. The walls of the cavity are yielding, so that any considerable change in the size, or texture, or position, may be detected by pressure; a mode of examination now learnedly called *palpation*. Percussion is often useful, however, in diseases of these organs. It enables the physician to discover their precise condition with greater accuracy, to detect with more certainty the nature and extent of any enlargement of an organ, or the existence of any morbid growth, or the accumulation of a fluid.

At first, percussion was performed with striking with the ends of the fingers directly upon the part examined. But this is liable to serious objections. Besides that it sometimes gives pain, there is an uncertainty in the resonance, in consequence of the difference of texture in the several parts struck upon. The present practice is, therefore, always to interpose something to receive the blow. A variety of substances have been used for this purpose. An ivory plate has been much commended and much used; others prefer a piece of India rubber; and many use only a finger of the left hand. The circumstance, that the finger is always at hand, while any other *pleximeter* adds something to the already cumbersome apparatus of the physician, is much in its favour; though in general that will practically be the best in the hands of any practitioner, which he is most accustomed to use

The degree of resonance on percussion is very considerably modified in different persons by the form and bodily condition of the patient. The chest of a thin, spare person, gives a much louder and clearer sound than one which is well clothed with fat and flesh. All this is easily taken into consideration by the physician, so that he is in little danger of mistaking an accumulation without the chest for disease within. A comparison between the two sides of the chest gives additional security against such a mistake. In some parts, it is true, the organs are different in the two sides; but to a considerable extent they correspond. It is also true, that the same state of disease may exist in the corresponding parts, so as to obscure the results of a comparison between them. But this is extremely rare. In general there is a marked difference in the sound of the two sides in most cases of decided disease. To take advantage of this comparison, it is of course necessary, that the practitioner be accurate in his knowledge of the anatomy of the parts, or he may confound the flatness produced by striking upon a solid organ for that of diseased structure.

The practice of auscultation is founded upon principles of physical science equally well established. Sounds, which are caused by certain actions within the cavities of the body, are transmitted through the walls of the cavity, and are perceived when the ear is applied closely to the surface, or through the intervention of a proper instrument. These sounds are always alike under like circumstances, and are changed when the circumstances which caused them are changed. Hence the physician, if he render his ear familiar with the sounds caused by the internal actions of the body in a healthy state, will readily perceive a variation, when the part is diseased. What disease is indicated by any particular unnatural sound, he can learn only from repeated and extensive observations. But that there is a deviation from the natural state, he will perceive at once; and the accumulated observations of all the physicians, whose attention has been directed to the subject, have now gone far to explain most of the deviations which have been noticed.

These principles are chiefly available for practical purposes in reference to the actions of the lungs and the heart. The air in passing through the windpipe gives rise to a certain sound, which in health is always nearly the same. This sound is modified in the smaller tubes (the *bronchia*) into which the windpipe divides, and again still more decidedly in the little air vesicles in which the bronchia terminate, and which occupy every part of the lungs. These several sounds are readily perceived and easily distinguished by a *practised* ear, applied to the corresponding part of the chest and back. Hence we have *tracheal*, *bronchial*, and vesicular respiration; and if these are heard only in their appropriate places, and in a right degree of force, they indicate a healthy state of the parts.

When a portion of the lung is diseased, the current of air in that part is either obstructed or its natural force changed, and of course the sound is modified. Hence, by applying the ear extensively over the chest, we are unable to detect the existence, and the precise seat, and generally the nature, of the disease. In inflammation of the lungs, the air cells are for the time obliterated in the part affected. As there are no vesicles for the air to enter, there is no vesicular respiration. But we have, what would not at first view be anticipated, *bronchial* respiration in its stead. In the healthy condition of the lungs, the porous character of the vesicular structure renders it a bad conductor of sound, so that the sound caused by the air in the bronchial tubes is not transmitted through them. But when they are consolidated by disease, they become good conductors of sound; and, at the same time, the morbid condition of the parts gives a greater degree of intensity to the sound itself.

Bronchial respiration, then, heard in the place of vesicular, always indicates—inflammation? That would be a simplicity in the art of distinguishing diseases, which nature does not tolerate. But it always indicates a consolidation of the lung from some cause, and inflammation is one of the most frequent of the causes. Another, and unhappily a frequent cause, is the deposition of tubercles, in incipient consumption. As in regard to percussion, so in reference to auscultation, there are means of distinguishing between the several morbid affections, which give rise to phenomena in many respects similar. These it is the business of the physician to study, and they often exercise his ingenuity and industry not a little. But it would lead us too far to attempt to explain them here.

There are other morbid sounds in the respiration, besides those which arise from what we may call the misplacement of such as are healthy. When the membrane which lines the air passages is inflamed, as in common cold or catarrh, its surface is at first unnaturally dry; and in that state the current of air through the tubes gives rise to various sounds more or less musical, which are the different modifications of the *sonorous râle*.[*] At a later period the membrane becomes more than naturally moist, and the passages are crowded, and more or less obstructed, by an adhesive fluid. In this state, if the ear is applied to the chest, the air is heard bubbling through the mucus, and this is the *mucous râle*. Inflammation of the substance of the lung, in its earlier stage, before the air vesicles are obliterated, is accompanied by a still different *râle*, the *crepitous*. In the advanced stage of consumption, a cavity, sometimes more than one, is formed in the lungs, at first filled with purulent matter, which is afterwards discharged through an opening into a bronchial tube. The air as it rushes into, and out of, this cavity, in every respiration gives rise to a peculiar hollow sound, which is the *cavernous râle*. If the cavity is very large, and the opening into it from the bronchia small, the sound resembles that caused by blowing into the mouth of an empty bottle (*amphoric resonance*). The same sound is produced when air escapes into the cavity of the chest, compressing the lung; which is sometimes the result of an accidental injury, and sometimes of ulceration.

The sounds of the voice give still farther aid in detecting and distinguishing the diseases of the lungs. In the healthy state of those organs, no peculiar sensation is communicated to the ear, unless it be applied over the windpipe, or over the larger bronchia at the root of the lungs. But where a portion of the lung is condensed, whether it be by inflammation, or tubercles, or by the infiltration of a fluid into its substance, a resonance of the voice is transmitted to the ear at the corresponding part of the chest, resembling that from the bronchial tubes, and thence called *bronchophony*. When there is an empty cavity in the lungs, the sound is still more remarkable. The voice seems to enter the ear, as if the mouth of the speaker were applied closely to it. This speaking from the chest (*pectoriloquy*), when strongly marked, is a very decided characteristic of confirmed consumption, and sometimes gives evidence of a hopeless condition of that deceptive disease, long before the symptoms have led the patient to feel any apprehension. Dr Williams says of it, "More than once has it occurred to me, that the very words, which in that delusive confidence with which this malady enshrouds its victims, ridiculed my examination of the chest, roundly saying, that nothing ailed them there, have belied their meaning, and, coming from the breast, have told a far different tale." A modification of the voice, of a different character, is observed in some states of the chest in pleurisy. The voice comes to the ear through the walls of the chest, not in its clear natural tone, but in a vibrating, thrilling, squeaking sound; like the bleating of a goat (*hægophony*).

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[*] There is a good deal of difference of opinion as to the best term to designate these morbid sounds. Some writers use the English word *rattle*, and others the Latin *rhonchus*. We prefer to adopt the French *rale*, used by Laennec. Where the thing to be expressed is new, it is better to adopt a new word, than to assign a new meaning to a word already in common use. As no new English word has been proposed, we can only do this by borrowing from a foreign language; and the French term was first introduced, and is more extensively used, and more agreeable to the ear than the Latin.

Auscultation is applied to the investigation of the diseases of the heart as well as those of the lungs, although the actions of this organ are more obscure, and the phenomena which attend them are less understood. On applying the ear over the region of the heart, we perceive, in the first place, the impulse of the heart beating against the ribs; then we hear two distinct sounds, following each other at every pulsation, in regular succession. By habitual practice we learn to distinguish the natural force of the impulse, as well as its natural extent and limits, and the regular cadence or rhythm of the successive sounds, and to appreciate the difference if either is changed by disease. The diagnosis of the particular diseases of the heart and large arteries is still involved in much obscurity. Considerable progress has been made in the knowledge of them within the last few years, and much may be hoped from the investigations which are constantly going on. As it is, we are in general able to distinguish with confidence between the actual changes of structure in that organ, and the nervous, and sometimes imaginary affections, which have often, in past times, been confounded with them. And, in many cases, if not in most, we can ascertain the particular character of the morbid affection, and give a tolerably sure prognostication of its termination. There is here consolation in the fact, that some of these diseases, which were formerly classed together without any other distinction than "diseases of the heart," and regarded alike with terror, as surely fatal, excite very little alarm, now that their true character, and the means of distinguishing them, are better known.

Enlargements of the heart, or its envelope, are easily detected by the greater extent over which the impulse and the sounds of its action are perceived, and by the absence of the sound of respiration, in consequence of the encroachment of this organ upon the lungs, as well as by an enlargement of the corresponding part of the chest, and a change in the sound on percussion. But a knowledge of the general fact of an enlargement is not enough. We wish to know, whether it be a simple dilatation of the cavities of the heart, or the thickening of its muscular substance, or a distention of the pericardium by a fluid. And each of these has its appropriate, characteristic marks, so as to leave little cause of doubt between them. The membrane which covers the external surface of the heart, and that which lines its internal cavities, and occasionally also the muscular substance itself, are liable to inflammation; its numerous valves are exposed to various diseases; and both its cavities and its orifices are subject to unnatural dilatation or contraction. Most of these changes can be detected with a greater or less degree of confidence during life, and some of them are capable of successful treatment. We shall not trouble our readers with a description of the different sounds heard in the several diseases, as we have done in regard to the lungs; partly because these sounds are less fully understood, and partly because we are afraid of wearying them with so many details.

Let us now see how these two modes of exploration, *percussion*, and *auscultation*, bear upon each other. We have thus far examined them only in their separate capacities. In their relations to each other, they do much to correct or confirm the results obtained from either separately. In all diseases of the chest, besides the knowledge obtained from the symptoms, we have two distinct modes of observation. If the inferences drawn from the sounds on percussion are confirmed by applying the ear to the chest,—and, in regard to the lungs, we have both the respiration and the voice to reveal their secrets to us;—and especially if these inferences are in accordance with the symptoms, we may feel an assured confidence, that we have come to a just knowledge of the disease.

A man has pain in the side, with difficulty of breathing, attended by more or less fever. All this may arise either from rheumatism in the muscles, or from pleurisy or inflammation of the lung. and the symptoms alone will not always tell what is the disease. If it be rheumatism, we are not likely to find any external sign of it, except perhaps some feebleness of respiration, on account of the difficulty of expanding and contracting the chest. If the disease be pleurisy, we shall have flatness on percussion, in the lower part of the side affected, changing its place if the patient changes his position, so as always to keep the lowest part. absence of all sound of respiration in that part, while the respiratory sound is louder than natural in the surrounding parts; and generally hægophonic resonance of the voice. If it be inflammation of the lung, there is dulness on percussion, increasing, as the disease advances, to flatness, retaining the same place in all positions, not bounded abruptly by healthy resonance; crepitous râle in the respiratory sounds, at first, followed by bronchial respiration and bronchophony. These several characteristics, however obscure they may seem in the description to many of our readers, to an intelligent and experienced observer will perfectly designate the character of the disease, so as to leave no doubt whatever in his mind. The disease may, indeed, be complicated, and then the evidences of its nature will be so too; and so will be the treatment that it will require.

A more interesting case is unhappily also much more frequent. A youth, just ripening into manhood, gradually loses his ruddy colour and vigorous strength; he loses flesh, and occasionally slight cough alarms the fears of his friends, though he himself thinks it nothing but a trifling cold. On examination, a slight dulness is observed at the apex of one lung,—so slight as scarcely to be appreciated except by comparison with the opposite side. The respiratory sound is at first remarkably feeble at that part, or a little later there is bronchial respiration and bronchophony. These are sure indications, that the way is already prepared for consumption. Still there is hope, if a proper regimen can immediately be begun and persevered in; for direct remedies can here do but little. Too often, either the patient is not alarmed early enough, or, in despite of every precaution or effort, the disease advances. Bronchial respiration is followed by a mucocrepitous, and then by cavernous *râle*, bronchophony by pectoriloquy, and so on till life is destroyed, each step of the destructive process being clearly revealed by the sounds elicited in successive examinations.

But what avails it thus to trace the melancholy progress of a disease which we have no power to arrest? There is some consolation in knowing the just amount of what we have to fear, however great that amount may be. And, if we have no remedies that are able to reach this formidable disease, who shall say, that we shall never have them? The first steps towards acquiring them must be taken in obtaining a full knowledge of the disease. We can now do something towards prolonging life, and diminishing suffering. We can at least abstain from doing harm by vain attempts to effect what is impossible. Above all, by an early discovery of the disease, we may teach our patient to flee from the danger before it overtakes him. In very many cases, a careful examination of the chest will detect unequivocal evidence of approaching consumption, long before the symptoms excite any considerable apprehension. At this early period much may be done to avert the danger. And if the attention of physicians and patients were more directed to this period, much more might doubtless be done to diminish the fatality of consumption than ever has been.

If it be asked, on which we are the most to depend for the elucidation of disease, the investigation of symptoms, or an examination by physical signs, we answer, that there is no opposition whatever between them. The use of direct exploration does not preclude a careful inquiry into the symptoms of the case. On the contrary, it prompts to a more full investigation. In practical life, it certainly is true, that those physicians who most constantly make use of the benefits of exploration, are not only equally, but generally much more, thorough in their inquiries into all the circumstances of a patient's health, than those who neglect or ridicule it. This may be partly because those, who are the most zealous in their researches, are the most willing to take the trouble requisite to acquire a new method of investigation, when it promises adequate advantages. But this is not the whole of it. There is something so grateful in comparing the results of different modes of examination, that, were it a mere matter of speculative philosophy, the mind would necessarily be stimulated by the comparison.

There are still some physicians, who laugh at the whole matter of direct exploration as either idle foolery, or empiricism. But they are those who have never taken the pains to learn how to practise it; were there no more advantage in it than they know how to obtain from it, their ridicule might be better founded. Whether their ignorance be the effect of indolence or incompetence, it becomes us not to say. But, while they laugh, others will learn; and the time is not far distant, when the physician, who is unable to practise percussion and auscultation, will be held to be unfit for his profession.

AUSTRALASIA, (*a.* to the articles *Australasia*, *Holland, New*, *New South Wales*, and *Swan River*.) *Australasia*, from *Austral*, southern, is supposed to comprehend the islands of New Holland, Van Dieman's Land, Papua or New Guinea, New Britain, New Ireland, Solomon's Islands, New Hebrides, New Caledonia, New Zealand, Kerguelen's Islands, and the islands of St Paul and Amsterdam, besides numerous reefs and islets of coral scattered over the Australasian sea. *Australia* implies New Holland alone, or, at the utmost, New Holland and Van Dieman's Land. The term, indeed, as applied to *New Holland* alone, has come of late years so much into use as to supplant almost altogether the old name of New Holland; and to this modern and limited sense of the term the present article will be confined. Whatever additional information may require to be given regarding the other islands of Australasia, will be found under their respective heads.

AUSTRALIA, OR NEW HOLLAND, the largest island in the world, being about equal in surface to three-fourths of the European continent, extends between the parallels of 39° and 10° 30′ south latitude, and the meridians of 112 and 153° 40′ east longitude, with a length from E. to W. of 3000 miles, a breadth from N. to S. of 2000 miles, a superficial area of more than 3,000,000 square miles, and a coast line of 8000 miles. We find considerable descrepancies in the statements of different authors regarding its measurements: we have given here in round numbers what we consider to be nearest the truth. It is washed by the Indian ocean on the west, and by the Pacific on the east; to the south lies the island of Van Dieman; and on the north it is separated from New Guinea and the Moluccas by the straits of Torres and of Timor. Timor, the nearest of the Asiatic islands, is about 280 miles distant from Cape Talbot. Much of this vast island remains to be explored; but the prevailing feature of its surface, so far as yet observed, is barren and wooded plains, traversed by long ridges of precipitous but not very lofty mountains; and rivers, which often spread into marshes, and do not preserve any course which may be called long when compared with the size of the country. A great part of the land, through the mixture of broad mountain masses and of heavy inundated plains, is rendered unfit for cultivation, and even for travelling. These obstructions, however, do not prevent the occurrence, on a great scale, of fine meadow tracts, where the richest herbage grows spontaneously, and where industry may raise the most plentiful crops. The mountains of Australia form a ridge nearly round it, rocky, and in many parts almost inaccessible. The Blue Mountains, in particular, which rise behind the colony of New South Wales, tower up almost like a wall; their cliffs being so steep, and separated by such dreadful abysses, as to have been long considered impassible. Yet they do not exceed in height the mountains of Scotland, their highest summits not being much more than 3000 feet. It was not till 1813 that a route was discovered through them, which has since been made completely patent.

Of the discovery of Australia, and other matters connected with its history and physical geography, the reader is referred to the articles mentioned above, to which this forms a supplement. We here confine ourselves to the British settlements in the island, which, as points of emigration, have, of late, excited unusual interest throughout the empire. These settlements at present consist of New South Wales or Eastern Australia—Southern Australia—and Western Australia, or Swan River settlement.

New South Wales extends about 1500 miles along the eastern coast of Australia, and two or three hundred miles inland. Its boundaries are but imperfectly, if at all defined. It lies at the distance of 16000 miles from Great Britain, and being on the opposite side of the globe from us, its seasons are reversed in relation to ours; its summer being in November, December, and January, and its winter in May, June, and July. It has now been divided into counties, certain districts being called, respectively, Cumberland, Camden, and St Vincent, on this side of the Blue Mountains; Westmoreland, Georgiana, King, Argyle, and Murray, to the South; and Roxburgh, Cook, and Bathurst, to the west of that great barrier. To the north of Sydney, divided by Hunter's river and the county of Hunter, are placed the counties of Northumberland, Durham, and Gloucester on the east, and Philip, Wellington, Brisbane, and Bligh, on the west of the dividing mountains.

Cumberland embraces that portion of New South Wales which was first colonized, and it is still the most populous district. It has about 56 miles of coast, comprehending the noble harbours of Broken Bay, Port Jackson, and Botany Bay. Behind, the river Hawkesbury, with its tributary stream, the Nepean, makes an entire circuit round it; beyond which the broad and steep mountain ridge shuts in the county, leaving to it a breadth of only forty miles. The soil on the coast, as is the case generally throughout the island, is light, barren, and sandy. In the interior it improves, and yields tolerable crops. This province has already four towns of some importance—Sydney, Paramatta, Windsor, and Liverpool. Sydney, the capital of New South Wales, is situated on the cove which bears its name, about seven miles inward from the head of Port Jackson. From an entrance not more than two miles across, Port Jackson gradually expands into a noble and capacious basin, having depth of water sufficient for the largest vessels, and space in which a thousand sail of the line might manœuvre with ease. It stretches about thirteen miles into the country, and branches into not less than a hundred small coves, formed by necks of lands, which afford excellent shelter for vessels in all winds. From among these, Sydney cove was selected. It is more than half a mile long, and about a quarter broad at its mouth, whence it gradually narrows to a point. The town of *Sydney* is built at the head of the cove, on a rivulet which falls into it, and in a valley between two opposite ridges. The streets are long, wide, and English in their appearance. The best houses are of white freestone or brick plastered, many of them being surrounded with gardens. The views from the higher parts of the town are bold and picturesque. Ships come up close to the wharfs and stores at Sydney. The population of the place is rapidly increasing; the latest estimate was about 20,000. In Sydney are to be found public seminaries, markets, banks, extensive warehouses, hotels, distilleries, breweries, stage-coaches for different parts of the colony, five newspapers, besides the Government Gazette, also a Monthly Magazine, and one or two Almanacs. *Paramatta*, formerly called Rose-hill, is the town next in importance in New South Wales to Sydney. It is situated at the head of the harbour of Port Jackson, distant from Sydney eighteen miles by water and fifteen by land. It lies on either side of a small river, called by the natives Paramatta, which falls into the harbour, and contains about 3000 inhabitants, principally traders, artificers, and labourers, who find employment in the surrounding country seats and farms. Its main street is about one mile long, and extends from the country residence of the governor to the wharf, whence the view down the river is extremely interesting. Several public buildings are in the town and neighbourhood. Stage coaches and steam boats pass daily to and from Sydney. *Windsor*, the third town, is built upon a hill close by the river Hawkesbury, which at this point is 140 miles distant from the sea, and navigable for vessels of a hundred tons burden four miles above Windsor. It is twenty miles from Paramatta, and thirty-five from 'Sydney; its population is estimated at about a 1000. The lands about Windsor are fertile, but are very liable to be inundated by the Hawkesbury, which has been known to rise seventy, eighty and even ninety feet above its ordinary level. Next to Windsor in importance is Liverpool, at the distance of nineteen miles from Sydney, in a southwest direction. It is situated on the banks of George's river, which discharges itself into Botany Bay, and contains about [illegible] inhabitants. The name *Botany Bay* was so long applied to New South Wales, that many believe the colony to be founded on that extensive inlet of the sea. Such was the original intention, but on being fully explored, it was deemed disadvantageous for the establishment of a colony, and Port Jackson was preferred. Botany Bay (so called by Sir Joseph Banks, from the number of new plants he discovered there) is about fourteen miles to the southward of the Heads, as the entrance of Port Jackson is called. It is wide, open, and unsheltered for vessels, and the shores around wild, bleak, and barren. A brass plate on the cliffs marks the spot where Captain Cook and Sir Joseph Banks landed. Near it is erected a monument to the memory of the unfortunate La Perouse, who spent a [illegible] here, refitting, before he finally sailed on the expedition from which he never returned. George's river is about half the size of the Hawkesbury, and is navigable for vessels of fifty tons burden [illegible] to Liverpool. After Liverpool the chief towns [illegible] New South Wales are Campbeltown, twelve [illegible] distant from Liverpool, Richmond, thirty-[illegible] distant from Sydney, Newcastle, and [illegible] "The last of these," says Dr Lang, "will doubtless ere long be the second in the colony, as [illegible] situated at the head of the navigation of [illegible] River, and in the centre of the most extensive [illegible]cultural and grazing district in the territ[illegible] There are other towns, however, in the progress [illegible] formation in other parts of the colony, which [illegible] few years will doubtless become places of [illegible]erable importance; as at Bathurst, beyond the [illegible] Mountains; at Goulburn and Bong Bong, [illegible] district of Argyle; at Patrick's Plains, on [illegible]

River; and at Wollongong, in the district of Illawarra. Three or four stage-coaches and two steamboats ply daily between Sydney and Paramatta, and there are also two daily coaches between Sydney and Liverpool—a rising town about twenty miles distant from the capital, forming a thoroughfare for the extensive country to the southwestward. Respectable persons travelling to and from the more distant settlements in the interior, generally travel on horseback, or in vehicles of their own; and goods and produce are conveyed to and from Sydney on large drays drawn by oxen. Between Sydney and Maitland there are three steamboats—the Sophia Jane, the Ceres, and the Tamar —that ply twice a-week each with goods and passengers; seventy miles of their course, or the distance between the Heads of Port Jackson and the entrance of Hunter's River, being along the land in the open Pacific Ocean. All the vessels, it is generally understood, have done exceedingly well. As a proof of this, there has been a company formed lately, the object of which is to place a vessel of much larger size on the course between Sydney and Hobart Town, Van Dieman's Land, to carry cattle as well as goods and passengers."

Camden county lies to the southward of Cumberland. It contains 2200 square miles, and embraces within its limits the fertile region of Illawara, a tract comprising 150,000 acres, entirely shut out from inland communication by precipitous mountains. It also embraces the cow-pastures, an area of 60,000 acres, so called from large herds of cattle being recently found there, all descended from one bull and two cows which had escaped soon after the founding of the colony.

Argyle county is to the westward of Camden. It is about sixty miles long and thirty broad. It is thinly wooded, and the territory is crossed by large tracts called *brushes*, which are altogether unproductive. Lake Bathurst is in this county, 129 miles S. of Sydney.

Westmoreland county lies to the north of Argyle, and embraces part of the Blue Mountains. It is about sixty miles in length, and forty in breadth.

Cook's county is to the left of Cumberland. Its length is fifty-six miles; its breadth, fifty. A great part of it is occupied by the range of the Blue Mountains, across which the fine road from Sydney to Bathurst lies. A large portion is table-land, from 2000 to 3000 feet high, abounding in picturesque scenery. Emu plains and several fertile valleys compensate in some measure for the prevailing rocky soil in this county.

Bathurst county is to the west of Cook's county. Its extreme length is seventy-two miles; its breadth sixty-eight. It consists in general of broken table-land, in some places forming extensive downs without a tree, such as Bathurst plains, which include 50,000 acres. Although but of recent discovery, being considered inaccessible until 1813, it is one of the most flourishing districts in the colony, the climate being healthy, and the pasturage excellent for fine woolled sheep. The town of Bathurst, which is thriving, is, by the road, [illegible] miles distant from Sydney.

Roxburgh county is to the north of Bathurst. It is fifty-three miles in length, and forty-three in breadth. The surface is hilly and broken, but it contains, notwithstanding, some good pasturage.

Wellington county (seventy miles long, by fifty-[illegible] broad) is to the north-west of Roxburgh, and of similar character.

Philip county (sixty-two miles long, thirty-eight broad) lies to the east of Wellington. It is thinly peopled, and little is known of its topography.

Of *Bligh and Brisbane counties*, lying in the north-west, near the Liverpool range of mountains, little also is known.

Hunter county (length seventy-one miles, breadth forty-seven) lies near the east coast adjoining Northumberland county, which intervenes between it and the sea.

Northumberland county (length sixty-one miles, breadth fifty) is one of the finest in the colony. Its general aspect is a series of undulations and elevated plains, intersected by numerous creeks, streams, and rivulets. The fine river, Hunter, affords a water communication throughout its northern boundary, and along its alluvial banks some of the most interesting farms in the colony are situated. Newcastle, the maritime town of the county, is fast rising into eminence; as is also the town of Maitland, on the Hunter, distant from Newcastle twenty-five miles. Coal is wrought at the latter town, so that the name is no misnomer.

Gloucester county possesses the fine harbour and rising town of Port Stephens, and is well watered. Its length is seventy-four miles, its breadth sixty-nine; and it comprises the Australian Agricultural Company's grant of a million acres.

Durham county is west of Gloucester, and partakes of the same character. Its length is sixty, and its breadth fifty miles.

The remaining counties—*Georgiana county, King's county, Murray county,* and *St Vincent county*—are situated to the south of Bathurst, and are yet but imperfectly explored. They approach the vicinity of Australia Felix, recently discovered and described by Major Mitchell.

Australia forms a contrast to other great territorial portions of the globe, in the comparative scarcity of large navigable *rivers*. A deficiency of fresh water seems, indeed, to be the great drawback to the occupancy and prosperity of many of its districts. New South Wales is better supplied in this respect than any of the other settlements. The Hawkesbury, with its tributaries, the Grose and the Nepean, is most valuable to the colony, but forms only a stream of secondary magnitude. In the interior, beyond the Blue Mountains, have been traced the Lachlan and the Macquarrie, running respectively courses of upwards of 200 and 300 miles. On the east coast also, are the rivers Williams, Paterson, and Hunter, forming Port Hunter; the Hastings, forming the fine port of Macquarrie, about 220 miles N. E. of Port Jackson; and the still larger stream of the Brisbane, falling into Moreton Bay. The Morrumbidgee river has its origin in the western ridge of the dividing range of mountains in Murray county, about 200 miles S. W. of Sydney. It pursues a tortuous course for upwards of 300 miles, and expands itself in the Lachlan. The combined rivers traverse a great extent of fine country, until they join the Murray, which forms the largest river yet discovered in Australia, and falls into Lake Alexandrina at Encounter Bay, on the south coast. Of the Murray and the Darling we shall have occasion to speak when we come to the section *South Australia*.

The *climate* of New South Wales, and indeed of the whole island, so far as experience goes, has been found to be salubrious, and extremely favourable to European constitutions. Occupying a position considerably nearer to the south of the equator than Britain is to the north, the climate is warmer in summer and milder in winter than with us. All authorities agree in the great uniformity of the temperature throughout almost its whole extent. It does not vary to a high degree even at different seasons of the year, nor is it liable to sudden transitions from heat to cold. The average temperature of Spring is 65·5., of Summer 72, of Autumn 66, and of Winter 55. In Sydney, the thermometer is rarely below forty. As regards climate, every thing in Australia is the reverse of what it is in Britain. There the north is the hot wind; the south, the cool; the westerly, the most unhealthy, and the easterly the most salubrious. It is summer with the colonists when it is winter at home, and the barometer is considered to rise before bad weather, and to fall before good. The following summary of the weather in New South Wales, during the year, is extracted from a Sydney newspaper.

"*January*. Generally the hottest month of the year. Wheat harvest ends. The locust's song gets weaker, and insects of the finer tribes begin to die off. Fruit plentiful: water melons in abundance. The orange-tree in blossom. Thunder-storms frequent, accompanied by showers of rain. Average temperature seventy-three degrees.

"*February*. Heavy close weather may be looked for in this month. Thunder-showers now and then. Last of the hot north-west winds, commonly the most intense. Stone-fruits begin to get scarce. The grape, pear, fig, and apple, in their prime. Mosquitoes congregate in clouds, and prove singularly troublesome to the lieges. Average temperature seventy-four degrees.

"*March*. Rains may now be expected. The vegetable world begins to recover from the parching effects of the summer sun, and plants of European growth or parentage lift their drooping heads. The equinoctial gales blow fiercely as in all other parts of the world. Average temperature seventy degrees.

"*April*. Heavy rains during this month, and the weather broken and uncertain. News of 'accidents by field and flood,' from the Hunter and Hawkesbury Rivers. Sydney a quagmire, and mudboots a necessary appendage. Australian fruits vanish, and apples make their appearance from Van Dieman's Land. Monsieur Mosquito tenders his farewell card, leaving only a few skirmishers to look after the fresh arrivals. Average temperature sixty-five degrees.

"*May*. The finest month of the year, and the most congenial to the European constitution. Weather clear, cool, and bracing. The sun sets and rises in a cloudless sky for weeks together. Heavy mist at times, succeeded by tolerably mild days. Average temperature fifty-eight degrees.

"*June*. Wheat-sowing finished in all the districts. Oranges brought to market, and continue in season for six months. Vegetables of all kinds in the greatest abundance, and of the finest quality. General character same as last month. The maize harvest ends. Average temperature fifty-three degrees.

"*July*. Generally clear and cool like the two preceding months. Ice may be seen a few miles out of town; and thirty or forty miles inland, the thermometer falls to thirty and thirty-two degrees. In and about Sydney it is rarely seen under forty degrees. Average temperature fifty-two degrees.

"*August*. Broken weather about this period, with heavy gales of wind. The bull-frog all alive in the ponds and marshes—'Croak, croak, croak.' Heavy rains from the S. S. E. and S. W. The peach-tree puts forth its delicate blossom about the middle of the month, clothing the gardens and orchards with beauty. Average temperature fifty-five degrees.

"*September*. The vernal equinox; fresh, hard, and heavy gales. The orchards present a beautiful appearance this month, the peach-tree forming the principal feature in the picture. Towards the latter end of the month, the thermometer begins to rise, and the mornings are pleasantly warm. Average temperature fifty-nine degrees.

"*October*. Planting of maize, or Indian corn, commences. Two hours after sunrise, that is, from six till eight o'clock, the finest part of the day. Monsieur Mosquito makes his first appearance on *any* skin. Average temperature sixty-four degrees.

"*November*. The hot weather sets in. Dust ankle deep, and fine as tooth-powder, possessing peculiarly searching qualities. 'The bush' teems with flying, creeping, and crawling things. Wheat harvest commences in the northern districts, and sheep-shearing is begun throughout the colony. Average temperature seventy degrees.

"*December*. Hot winds now and then, generally followed by a southerly wind and a cloudy sky. Thunder, lightning, and rain, at intervals. The locusts in full voice, and congregating on the oaks and gum-trees in myriads. The Christmas dinner is eaten with open doors and windows, and the thermometer standing at eighty-five degrees of Fahrenheit in the shade. Average temperature seventy-four degrees."

The excellence of the climate of New South Wales may be inferred from the variety of its vegetable productions. All the finer kinds of fruits are produced there in abundance, as apples, pears, plums, strawberries, cherries, mulberries, apricots, peaches, nectarines, figs, grapes, oranges, lemons, pomegranates, &c. Green peas are gathered twice a year. Brandy is distilled from the peaches, but a want of proper management has hitherto prevented the successful manufacture of wine from the grapes. Indian corn and wheat are the two chief kinds of grain raised in the colony. Wheat on good soils averages from twenty to thirty bushels in the acre, maize from forty to fifty bushels. Oats and barley have as yet been chiefly cultivated for fodder. Tobacco of good quality is grown.

In Australia, the prevailing rock is sandstone, so that the soil is in many places dry and loose, and as the trees are all evergreens, the ground is not annually enriched by the succession of vegetable matter, caused by the fall of the leaves, as is the case in the fields of Europe and America. The rich lands of Australia consist chiefly of the alluvial soils on the margins of the rivers; and hence the country near the Hawkesbury and Hunter rivers is considered the granary of the colony. The liability, however, of the rivers to inundations, must be taken into consideration in estimating the eligibility of a settlement. During a rainy season vast torrents of water are poured into the rivers, which soon overflow their bounds, and on reaching the more level country, the water, no longer propelled by its gravity, accumulates to an immense extent, and produces a great destruction of property. The Hawkesbury, as we have already stated, has been known to rise ninety feet above its ordinary level

The droughts, which occur at irregular intervals, and sometimes continue for two years in succession, are a still more serious evil to which New South Wales is exposed; and if famine is not to be anticipated, from the abundance of animal food, and the facility with which supplies can be obtained from Van Dieman's Land, Java, and Bengal, still they must occasion much inconvenience and serious fluctuations in the grain market.

The *geology and mineralogy* of New Holland are yet but imperfectly known. It may be stated generally, that Australia is of *diluvian*, as contradistinguished from what geologists understand by *volcanic* origin; but whether the land has been left dry by the receding of the mighty deep, or whether, as in Chili or other parts of America, some powerful submarine action has raised the earth above the ocean level, either by one shock, or by a series of successive shocks, must, in our present ignorance, be a matter of mere conjecture. Like other parts of the globe, Australia appears to have experienced the effect of an universal deluge, previous to which it was tenanted by a different and more numerous class of animals than are now found on its surface; and it also appears that the receding waters of the great ocean, in their progress to the South Pole, had rested for a longer period on New Holland than on the northern hemisphere. In many parts of the coast, extensive beds of marine shells of the same kinds as those at present living in the adjacent seas, are found, and in the interior caverns have been discovered containing the bones of extinct races of animals, thus refuting the notion that New Holland is comparatively of recent origin. Extensive masses of granite occur on the eastern coast of the island; trap porphyry and serpentine have also been discovered in several places. Immense beds of sandstone are to be found in the vicinity of Sydney, and this rock appears to constitute the greater part of the Blue Mountains. Limestone is abundant, and in some districts it passes into marble. But by far the most valuable mineral yet found in Australia is coal, of which a considerable quantity is wrought at Newcastle, and indications of it have been traced in many other parts of the country. The district, indeed, to the south of Hunter's river is an extensive coal-field, the cliffs on the sea-shore presenting an interesting section of this stratum. The seams of coal are distinctly visible on the abrupt face of the cliffs, forming the south headland of the harbour of Newcastle, and may be traced for nine miles, when they abruptly terminate, by suddenly bending downwards, and sinking below the level of the sea. From this place, a low sandy beach and lowland extend to the entrance of Lake Macquarie, the south head of which rises into high cliffs, in which the coal strata again present themselves. The coal is of vegetable origin, the foliage and fibres of the plants being often quite distinct. In the alternating strata of the coal are found nodules of clay and ironstone. Beds of coal and iron are also met along the banks of the Paramatta and other rivers; and in the vicinity of the mountains from which many of them flow, these minerals also abound, communicating a ferruginous taste to the smaller streams, and indicating the stores which are yet to be explored. Copper and other metals have also been found, but as yet coal is the only mineral which has been worked, although the day is probably not far distant, when iron will form a staple product of Australia. Rock-crystals, garnets, and agates have been found, but none of the more precious gems.

In its *animal and vegetable productions*, Australia is very peculiar. There is a total absence of all the larger quadrupeds, such as elephants, lions, tigers, bears, deer, &c. The largest four-footed animals yet discovered in the island are the kangaroos, of which there are many varieties, from the "kangaroo rat" to the "forester," which stands from four to five feet high. There are more than forty species of the Marsupial or pouched family in New Holland, of which scarcely any congeners occur elsewhere. Two-thirds of the Australian quadrupeds make their way by springing in the air. All the kangaroos, when using any degree of speed in their movements, proceed by prodigious leaps, sometimes exceeding twenty paces, and this can be kept up for some time, so as to outstrip the fleetest greyhound. The kangaroos are purely herbivorous, grazing like deer or cattle, and are mild and docile, except in self-defence. Their flesh is much esteemed; but they are fast disappearing before the settlers, or, as the natives say, "where white man sit down, kangaroo go away." The Opossum tribe are very numerous, and somewhat similar to those found in America. The native dog is somewhat like the Indian jackall, with a head like a fox, and erect ears, the colour being generally a reddish brown. It is very destructive to sheep and poultry, and is therefore destroyed without mercy by the settlers. The wombat, a kind of bear or badger, the porcupine ant-eater, and also a species of sloth, are to be found in New Holland. But the most singular animal of New South Wales, indeed the most extraordinary in the world, is the *ornithoryncus*, or *duck-bill*, called by the inhabitants the *water-mole*, which is chiefly found near Port Jackson. It combines the characteristics of a bird and a quadruped. It lays eggs like the one, yet suckles its young like the other! It presents the perfect bill of a duck, engrafted, as it were, upon the body of an otter or mole-like animal. Its size is equal to that of a full-grown cat, but its short feet and tail give it the appearance of being smaller. It swims well, and indeed seldom quits the water, as it crawls with difficulty on land. The foot of the male is armed with a spur like a cock's, through which passes a poisonous liquor, rendering the animal dangerous. The birds of New Holland are numerous and in great variety. The emu or cassowary, a species of ostrich, is one of the most singular, but it is fast disappearing. The most common birds belong to the Melliphagous or honey-sucking family. Many of the warblers are uncommonly beautiful; the two most magnificent are the rifle bird, and the ring oriole. The pigeons, for variety and beauty of plumage, are unequalled in any part of the world, as are also the parrots, parrakeets, and cockatoos. The spotted grosbeak is a splendid bird, as is also the lyre-tail. This gigantic crane is a stately bird, and is seen frequently on the borders of rivers or lakes, where also the black swan is found. Eagles, hawks, bustards, plovers, pheasants, snipes, &c., are common. The aquatic tribes are nearly similar to those found in other countries. Insects are numerous, and approximate more to those of Africa and Asia, than America. Locusts are common in some parts of the colony. Of bees, there are three kinds, all without stings. English bees, which have been recently introduced, multiply fast. Ants are of several varieties: the largest are nearly an inch in length. Flies and mosquitoes are often a great nuisance, but the latter are disappearing from the cultivated parts of the colony. Spiders are very large, and in some seasons caterpillars are so numerous as to blight the finest crops. Reptiles are fortunately not numerous. There are several varieties of snakes, a few of which are poisonous. Scorpions, centipedes, and tarantulas are found, but not to such an extent as to occasion any considerable inconvenience or discomfort to the settler. Lizards and frogs are numerous. The deaf adder is poisonous. It swells out in the middle, with a flat head, and a cleft tail, which latter opens and shuts like a pair of forceps. When teazed, it seizes a stick as tenaciously as a cur dog. Cod and perch (as they are called) are found in great quantities in the fresh water rivers, and many varieties of other fish are found along the coast. Whales and seals frequent the coves. Oysters are extremely plentiful, and, though generally small, are of a delicate flavour. The shells of the Southern ocean yield only, in attraction, to those of the Indian sea.*

The vegetable productions of Australia are, like the animals, in many cases, very different in structure and appearance from those found in other countries. Acacias are extremely common, and upwards of a hundred different kinds have been found, all of them possessing a family resemblance which distinguishes them from the Acacias of the old and new world. The Proteas and Banksias are almost peculiar to New Holland; the Eucalyptus Casuarina, and the Norfolk island pine, are remarkable for their beauty, and afford valuable timber. The bark of several trees abound in tanning matter, and large quantities have been sent to Britain as a substitute for oak bark. Several of the Acacias afford a product possessing the properties of gum arabic, which is obtained from an African species of the same tribe of plants. A species of Eucalyptus produces manna. Many of the trees of New Holland attain to a great size: thus the Norfolk island pine reaches the height of 150 feet, and trees, whose diameter amounted to 15 or 20 feet, have been found in different parts of the country.

Great as the resources of New South Wales are, as an agricultural, fishing, and mining colony, it is on the rearing of sheep, and the production of wool, that it at present mainly depends for its prosperity. No country in the world presents such an illimitable extent of pasture land, or possesses a more admirable climate for grazing, which, from its dryness and mildness, improves the wool, and permits the sheep to find sufficient food without shelter during the whole year. America, as is well known, is not a sheep-feeding or wool-growing country. In Canada and other northern parts, sheep require to be housed, and fed by artificial means, for several long winter months; while on the fine prairies of the States, the sheep which are left at large throughout the year do not yield wool of a valuable quality. New South Wales, on the other hand, resembles Spain in its qualities for pasturage in all seasons, and its climate produces equally fine, if not superior wool. At the present moment, New South Wales wool enjoys the highest reputation in England and America—it takes the lead in the market—and so readily and so profitably is it disposed of, that the cost of transport of sixteen thousand miles goes almost for nothing in the grower's calculation of profits. Most of those beautiful and soft woollen fabrics which go by the names of Indianas, Merinos, and Schallis, and are in such large request by ladies in the shops of our haberdashers, are chiefly manufactured from the fine New South Wales wool; and it is obvious, from the growing taste and demand for these articles, which are so well suited to our climate, that (barring fiscal interference) the production and sale of this species of wool must soon become one of the first trades connected with British commerce. The introduction of this important branch of industry is due to the talents and exertions of the late John Macarthur, Esq., one of the earliest free settlers in the colony. As early as [illegible], this gentleman obtained several Merino sheep from the Cape of Good Hope, with which he improved his Bengal flock; and subsequently, in [illegible], he visited England, and laid his schemes before the privy council, who merely approved of them, and he accomplished the rest by his own enterprise. The efforts of Mr Macarthur were completely successful, and the rapid increase in the quantity of wool, annually exported from Australia, proves this branch of industry to be capable of indefinite extension. "During the ten years (says Dr Lang) that had elapsed from the first muster after governor's Macquarie's arrival in the year 1810, to the annual muster in 1820, the sheep of the colony had increased from 25,888, to 99,428; Mr Macarthur's flock being at the latter period 6800, of which [illegible] were pure Merinos. During the administrations of Sir Thomas Brisbane and General Darling, it became a matter of controversy in the colony, whether the Merino or the Saxon breed, of which a few sheep had been introduced into Van Diemen's Land, direct from Germany, in the early part of the year 1823, produced the finest wool, and was most profitable for the sheep farmer. The preference, however, is now generally given to the Saxon breed, which, it is well known to persons acquainted with sheep-farming, was itself originally of Merino extraction. Several cargoes of Saxon sheep have at different times been imported into the colony by different colonial proprietors, as well as on speculation; and sheep of that breed are now very widely diffused over the territory, the colonial flocks of inferior breed having from time to time been gradually improved by crossing with the

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* The following account of the sporting, &c., at Bathurst, in New South Wales, is given by a recent traveller:—"Bream is caught in all the rivers, bites very fast and is nearly as large as the salt-water fish of the same name caught on the coast. The cod is the most remarkable fish at Bathurst, and is not unfrequently caught as heavy as fifty, sixty, and even ninety pounds; when caught in large quantities, they are generally dried, and may be seen in this state hanging up inside the roofs of the settler's houses. Game is plentiful; ducks, snipes, widgeon, teal, abounding near the rivers. I saw eight black ducks brought down at one shot, weighing, as I guessed, four pounds each. These are delicious eating. Sometimes the settlers will throw up a breast-work of boughs, near some favourite rendezvous of the birds, close to the water, and when they have collected near the spot, the sportman fires from behind his battery, and does dreadful mischief among them, forty ducks having been brought down in this manner at one fire. The plover and bronze-winged pigeon are very numerous, and easily shot; the latter, especially, is a beautiful creature, and twice the size of the domestic pigeon, looks well, and eats well at table. But the best sport at Bathurst is the quail. This is the partridge shooting of New South Wales generally; but the Bathurst settlers seem to enjoy it in perfection, having a much greater scope of clear open country. The cockatoo and magpie also abound at Bathurst, and are a great nuisance to the cultivated fields. In the forest country a variety of parrots, of the most beautiful plumage, fly about in every direction. This abundance of the feathered tribe was the more remarkable, as, in a late journey to Hunter's River, very few birds of any kind were seen. There is a hunt at Bathurst for the purpose of enjoying the sport after the kangaroo, and exterminating the native dog."

Saxon. The wool undergoes the usual process of washing on the animal's back in a running stream before it is shorn: it is then dried, shorn, and sorted; after which it is packed into bales, and forwarded on large drays drawn by oxen to Sydney, to be there shipped for London. The freight to London usually costs only from a penny to three-halfpence per lb., the price in England varying from 1s. 6d. to 2s. 6d. per lb. Mr Macarthur's wool for the year 1833 averaged 3s. 6d. per lb., the general average for that year being from 1s. 11d. to 2s. 9d. The paramount importance of this branch of colonial produce will appear from the return of the quantity of wool exported from New South Wales for each successive year, from 1819 to 1836, inclusive; the quantity exported in the first of these years being only 71,299 lbs., while the exportation for 1835 amounted to 3,776,191 lbs., and the amount of this principal article of colonial export having more than doubled itself during the last few years. Sheep in New South Wales generally double their number every four years—in many instances in less than half that period; and as there is an unlimited extent of pasture to the northward, as well as to the southward and westward, the quantity of wool that will be exported from the colony in a few years hence, will be great beyond belief in England. An intelligent merchant in Sydney has calculated that the export of this principal article of colonial produce will, in all likelihood, realise half a million sterling in the year 1840. The quantity of British produce of every description, which this large income from a single article of colonial produce will enable the colonists to purchase, and the stimulus it will afford to commercial industry and enterprize both at home and abroad, are considerations of the highest importance to every British statesman."

The business of a sheep-farmer or wool-grower in New South Wales is much less toilsome and precarious than a similar profession in this country. Here the rent of land is enormous; the diseases of the sheep numerous and often fatal; and the toil of preserving the animals from starvation or from destruction by snow in winter, considerable. In New South Wales, extensive tracts of land may be cheaply rented or purchased for a comparatively small sum; and if a careful shepherd or overseer remain beside the animals to keep them from straying, they require neither doctoring nor artificial feeding—the whole process goes on naturally under the blessed canopy of heaven, and after getting over the initiatory difficulties, the proprietor has little else to do than pocket the profits of his speculation. It is perfectly clear, from every published statement, that sheep-farming in New South Wales is every way more agreeable and profitable than that of raising crops from the soil; and as this is well known, capital will take that direction in spite of all representations to the contrary. It should, nevertheless, be understood, that, to those persons who prefer agricultural to pastoral pursuits, or who may not have so much as £300 and upwards to adventure on a stock of sheep, the country in every direction presents facilities for settling on small arable farms, which may be purchased or rented either in a natural state, or partially cleared and cultivated. The practice of granting lands free to settlers is now abolished by government, and all crown lands are sold by auction, at whatever they will bring above the upset price of five shillings per acre.

The general import and export trade of New South Wales has been for some years rapidly increasing. In 1825, the total value of imports was £300,000, and in the year 1833 it had increased to £713,972. In 1825, the total value of exports (consisting of wood, hides, horns, cattle, horses, wool, provisions, &c.,) was £78,908, and in 1833 it had increased to £394,801. The shipping belonging to the colony is likewise increasing; and already Sydney owns about a hundred vessels, forty of which are engaged in the whale fishery.

The proximity of New South Wales to the most eligible southern whale fishing stations enables the settlers to perform three voyages while the whalers from Britain and America perform two. While the former reach the grounds in fifty days, the latter are frequently seven months in performing the passage. The freight of the oil from New South Wales to England is estimated at only a tenth of the amount they can realize by being employed in the fishery, during the time they would consume in going to and returning from England themselves. The Australians, therefore, anticipate a monopoly of the South Sea whale fishing.

The progressive prosperity of New South Wales may be traced in the rapid increase of its *revenue*. In 1813, the total revenue of the colony was £12,642; in 1817, £22,158; in 1822, £44,768; in 1826, £72,220; in 1830, £104,729; in 1834, £205,535, and in 1836, £330,285.

The colony, when established at Sydney cove, on the 26th Jan., 1788, consisted of only 1030 individuals, of whom upwards of 700 were convicts. Since that time four censuses have been taken, which give these results: 1810, 8293; 1821, 29,783; 1828, 36,598; 1833, 71,070, the number of males being to that of females about three to one. The total number of white inhabitants in the colony is now estimated at upwards of 100,000, of whom about 25,000 are convicts, the residue of upwards of 90,000 who have been transported to the settlement since its formation in 1788. The three great divisions of the white population are, 1st, Those who have arrived in the colony free, and their descendants; 2d, Those who are free by servitude, or by pardon, and their descendants; and, 3d, Those who are still in bondage. The first are called *sterling;* the second, *emancipists;* and the third, *government-men.* Those born in the colony from the white population are called *currency.* The free emigrants in general refuse to hold social intercourse with the emancipists. This treatment is borne indignantly by the emancipist, who has been admitted to a complete footing of political equality, with the exception of not being summoned upon juries at quarter sessions. The distinctions and divisions which exist in the society of New South Wales are necessary results of the convict system, and much to be deplored. Many of the emancipated convicts and their descendants are now men of considerable wealth and influence. "Our emancipist body, in honest truth (says Cunningham), forms the most useful and enterprising portion of our community—all the distilleries, nearly all the breweries, and the greater portion of the mills and various manufactories, being owned by them; while they have never, so far as I can learn, disgraced themselves by engaging in any of the smuggling transactions, whereby many of those who came out under the proud title of *free men* have tarnished their reputation. Several of our most respectable merchants have told me, that in the numerous matters of business wherein they have been concerned with the emancipists, their conduct has always been most honourable."

When convicts arrive in the colony, they are consigned to barracks for their reception, and are ready for disposal as servants to the settlers in all parts of the country. When disposed of to the settler, the convict is provided by him with the means of erecting a hut for himself, if no such accommodation exists at the settler's station. The convict receives no wages, but is provided with certain daily rations of food, clothing, bedding, and culinary utensils. The hours during which he is required to work are from six in the morning until six at night, with the allowance of an hour for breakfast and another for dinner. When a convict conducts himself with propriety for a certain length of time, and which is proportioned to the term of his sentence, he is entitled to claim from the colonial government what is called a ticket of leave, a sort of warrant or licence, which enables him to live where he pleases, and to employ himself in any legal way he may choose. This, of course, is recalled if he commits any new offence; and many advertisements are from time to time to be seen in the Sydney newspapers, intimating such recall, and naming the individuals. Though, while he conducts himself with propriety, the convict's peculiar condition in society is not obtruded upon him by any peculiar treatment, yet the slightest departure from this brings him immediately within the reach of the colonial laws. If refractory, or even merely insolent to the settler, his master, he may be taken before a magistrate, and either flogged, or sentenced to work for a certain period on a short allowance of food, in what are called the government chain-gangs, composed of convicts who have offended a second time, and are, as a punishment, worked in fetters. On the expiry of his original term of banishment, the convict becomes an emancipist, and is then his own master. From an interesting parliamentary paper, it appears that the average expense of transporting a convict to New South Wales, which was in 1827, £24. 1s. 6d., is now considerably under £20; and that the average expense of actually maintaining and clothing a male convict there in 1821, was £22. 9s. 8d., but that now it does not exceed £7. 3d.

In order to ameliorate the evils inseparable from the penal system, the colonial government has lately adopted means for procuring the settlement of free and respectable labourers, including all classes of mechanics, with their families. The revenue derived annually from the sale of crown lands is devoted to this object. At certain ports in the united kingdom, government emigration agents are settled, and to these gentlemen the whole business of collecting and sending off emigrants is entrusted.

The number of *aboriginal inhabitants* in the colony of New South Wales has been estimated at 5000. They possess the thick prominent lips, sunken eyes, high cheek bones, and calveless legs of the African, differing however, in the hair, which, except in Van Dieman's Land, and the adjacent equally cold coast of Australia, is long and coarse. The nose, though large, is not so flat as that of the African, and the forehead is high, narrow, and pointed. The features of the women are not altogether unpleasant, which, added to an easiness of manner and a harmonious voice (especially in the pronunciation of English) render many of them favourites with the white men. Nothing can equal the brutality of these tribes in their treatment of the weaker sex. In order to obtain a woman in marriage, a man lies in wait for her in some place of retreat, knocks her down with a bludgeon or wooden sword; and, while she is yet besmeared with blood, takes her to his own home, where the nuptial ceremony is completed in a manner too shocking to be described. Polygamy is very generally practised. Both sexes go naked, and have no feelings of shame. In general, it may be said that the whole of the aborigines of Australia are of the same stock. Yet their language differs so much, that tribes within short distances of each other have each their own peculiar dialect. In the interior their number seems to be diminishing from famine, war, and the cruelty and encroachments of white settlers; at Sydney and other towns, where they exist chiefly by begging, vice and disease are fast destroying them. The ill-usage which they receive from the colonists in the back settlements, who, besides depriving them of their fishing stations and their kangaroo grounds, often shoot them relentlessly, like so many wild animals, is a disgrace to the colour and the creed of the whites; it displays a soul blacker than the skin of the poor negro—a creed more cruel than the most savage of his superstitions. So recently as June, 1838, a case occurred in New South Wales, in which eleven convicts, some of them emancipated, destroyed, and afterwards burned the bodies of no fewer than twenty-eight native blacks, men, women and children, on no other provocation that could be conceived than a suspicion of some of the natives having stabbed some of the cattle in charge of the convicts. History scarcely furnishes a case equal to this in atrocity; yet when the culprits were brought to trial in November, 1838, such is the prejudice of the colonists against the natives,—so little estimation is the life of the latter held,—that a jury found, in the teeth of the most satisfactory evidence, the whole of the eleven convicts not guilty; and it was only on a second trial, on a new indictment, that seven were, with difficulty, pronounced guilty, and executed. The heart sickens at the thought of such circumstances; and eyes, which would otherwise rest with pleasure on the bright picture of prosperity which the colony presents, turn with sorrow from its contemplation, when they see it thus shadowed with crime and stained with blood.

South Australia. South Australia is a large district of the island, situated on the south coast, extending from 132° to 141° E. longitude, and from 38° to 26° S. latitude, and containing nearly two hundred millions of acres. It lies between the Swan river and New South Wales, and may be easily recognised on the map of Australia, by being penetrated from the sea by Spencer's Gulf, and Gulf St Vincent, at the entrance to which lies Kangaroo Island.* It is distant from Britain 12,000 miles, namely 6000 miles to the Cape of Good Hope, 3000 from the Cape to the small island of St Paul's, and 3000 from St Paul's to South Australia. This distance may be performed in twelve weeks, but the average length of voyage may be reckoned a hundred days, or fourteen weeks. South Australia possesses a sea-coast of 1500 miles in extent. The principal harbours throughout it at present known are—Port Lincoln in Spencer's Gulf, Nepean Bay in Kangaroo Island, and Victor Harbour, in Encounter Bay. Port Adelaide is only fitted for small vessels. The harbour of Port Lincoln is one of the finest in the world, and in all probability will eventually be the principal seat of commerce in South Australia; Nepean Bay also affords commodious and extensive anchorage, but from its situation on Kangaroo Island, it can never rise to much consequence, as that island is totally destitute of fresh water, and so overrun with brushwood as to form a most serious obstacle to its cultivation; while Victor Harbour, though much inferior to Nepean Bay in point of accommodation and security, is likely to rise into importance from the extensive, fertile, and well-watered country by which it is surrounded.

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* This island is 200 miles in circumference. Except for its fine bay, it is of little value as a settlement, being overgrown with brushwood.

The coast of South Australia was first explored in 1802, by Captain Matthew Flinders, with the assistance of Mr Westall, the artist, in H. M. S. Investigator. The captain in his researches underwent many dangers and privations, for his ship was badly fitted out, the men were labouring under scurvy, and he lost the master of the vessel, Mr Thistle, and boat's crew, in crossing over Thorney passage to Thistle Island.* In Encounter Bay, he met with an expedition under Captains Baudin and Freycinet, in the French corvette Geographe, sent out by Napoleon's government to survey the coast, and thus he anticipated them in the discovery of Spencer's and St Vincent's gulfs by a few days only. In 1815, Captain Dillon visited this part of the coast; in 1819, Captain Sutherland spent seven months at Kangaroo island, on a sealing expedition; in 1827 and 1828, Captain Goold made two sealing voyages to this coast; and still later Captain Sturt surveyed a considerable part of the country. The different accounts of these gentlemen tended to awaken an interest in the public mind regarding a splendid territory which had hitherto been all but unknown.

Every account agrees as to the salubrity of the climate, and general fertility of the soil, of South Australia. In these respects it is considered superior to New South Wales. But in the essential requisite of fresh water it is more deficient than the latter colony, scantily supplied as that is; and unless some artificial means are adopted for obtaining or collecting a sufficient supply for all seasons, it is evident the colony can never prosper to any large extent. On this subject, Mr T. Horton James, in his "Six Months in Australia," has spoken out manfully; and we have more reliance on his account than on the descriptions of emigration committees and bad commissioners, which too much resemble in style, and we fear also in veracity, the sublime advertisements of London auctioneers.

"All New Holland," says Mr James, "a continent as large as Europe, may be described as far as it is known, as being cursed with a general want of water—there are scarcely any rivers, and for this reason, that there are hardly any mountains. This is a fatal objection to the interior of this vast territory; for, with the exception of the Coast Ranges, no person has hitherto been able to descry any thing like elevated land in the interior of the country. South Australia has therefore nothing to boast of, any more than the adjoining colonies, on the score of mountains; and I should say that Major's Mitchell's newly-discovered country of Australia Felix and Port Philip, surpasses the commissioners' colony in this one important item. The Mount Lofty range is certainly a very beautiful and conspicuous object, though rather limited, not running more than forty or fifty miles in the direction of the meridian, and its average elevation, except at two or three peaks, does not exceed 1000 or 1500 feet. In breadth it may be about twenty or thirty miles, and contains in its whole extent somewhere about half a million of acres, of a very pretty well watered mountain pasturage, abounding in fine timber for building purposes as well as for fencing, wheelwright's work, &c. and worth two or three shillings per acre.

"The other mountains at present known, are those at the top of Spencer's Gulf, known as Mount Arden and Mount Brown, and those of Hammock Mount and Barn Hill, at the top of St Vincent's Gulf. This is a very meagre catalogue for such an extensive country, and no wonder that South Australia labours under all the usual evils of drought, so peculiar to New Holland in general. Captain Flinders could see no other high land all the way from Fowler's bay, which may be considered the first point of the colony nearest England, until he came to Cape Northumberland, which is the other and most eastern limit of the coast. Of course, as was hinted above, where there are so few mountains there cannot be many rivers, and the Murray is the only river that deserves the name hitherto discovered. This is as broad, for the last 200 miles of its course, as the Thames at London Bridge, and carries its water perfectly sweet and drinkable as far as the lake. Next to the Murray may be reckoned the river 'Glenelg,' discovered by Major Mitchell, at the eastern boundary of the colony, near Cape Nelson, a very useful stream, though dry at the mouth at some seasons of the year, for the most part running through the adjoining colony of Australia Felix, at the back of Portland Bay, and a finer country need hardly be sought for in the whole world than this same country to the north of Portland Bay. The river Rufus of the maps, discovered by Captain Sturt, and so called after the red hair of his friend and companion, Mr George M'Leay, falling into the Murray, in about longitude 141°, is now discovered to be a mere nothing, not exceeding four miles in length, and merely serves for the outlet of the superabundant waters of the pretty Lake Victoria, recently discovered by Messrs Hawdon and Bonney, on their overland journey with cattle from New South Wales. The only other rivers, or rather rivulets, at present known throughout this immense colony, are the little streams called on the maps the Torrens and the Hindmarsh. The first is barely sufficient to supply the handful of settlers at Adelaide with fresh water for their cattle and domestic purposes, and the latter is a small stream which discharges itself into Encounter bay. This paucity of rivers is the worst feature in the picture of South Australia, and must for ever prevent any thing like a dense or even numerous population occupying the interior of the country. In this respect it is inferior to New South Wales, to Port Philip, and to Australia Felix. Even the important river Murray, large as it is, and long as it is, will turn out not to fulfil the high expectations which the friends of Australia had formed of it after the spirited undertaking of Captain Sturt. Had that excellent man and judicious explorer not been in a boat, and of course considerably below the surface-soil, when he made his memorable voyage down the Murray, he would have ascertained the nature of the adjacent country. He would have found that all the way from Swan Hill, above the junction of the Murrumbidgee, as far down as the mouth of the Darling, the whole country, on both sides, is good for nothing; that with exception of a ribbon of reeds on each bank, varying in breadth from one mile to two miles and a half, and extending down the river between three and four hundred miles, it is one vast, arid, African desert, totally useless for any purposes of colonization. The author visited all the upper branches of this fine river, the Murrumbidgee, the Toomat, the Hume, the Ovens, the Oxley, and the Omio; and as an eye-witness to the general beauty and fertility of the land in their respective districts, had formed, in common with other persons, golden opinions of the lower country, where they all unite and take the name of the Murray but the recent journey of Messrs Hawdon and Bonney, with a herd of nearly 400 head of cattle, from the crossing place at the Omio, to the foot of Mount Lofty, in eleven weeks, has unfortunately set the matter perfectly at rest. If my friend Mr Bonney, who was the pilot on this occasion, with nine persons, had not kept the very edge of the river throughout the whole journey, they must have all perished—men as well as cattle, for want of water and want of grass. The country from the Murrumbidgee to the Darling, did not even boast a solitary tree of any size or magnitude; and the cattle subsisted entirely on the green tops of reeds at the water's edge. This made their journey considerably longer than would appear at first sight to be necessary, but they could not make the slightest detour from the north bank of the stream without being immediately distressed for want of water and grass. This desert country of course comprises many millions of acres—away from the reedy beds on the edge of the river, nothing is seen but a deep subsoil of white pipe clay, beyond which is a solitary and monotonous growth of pine scrubs, pushing their dull and stunted tops over the sandy wilderness, as far as the eye can reach, making of course all travelling in such a country any thing but agreeable. It is sufficiently condemnatory of the river 'Murray' that from the ford of the Omio, which is seventy miles north of the town of Melbourne at Port Philip, our travellers hardly ever saw a tree worthy the name, till they reached the boundaries of South Australia. This long continuance of barrenness and sand made the approach to the new colony particularly pleasant, for there they discovered well-grown stately trees of stringy bark stretching in magnificent profusion all the way up the eastern slopes of the Mount Lofty ranges, and, beneath a rich sward of kangaroo grass for their cattle, giving the travellers great spirits at the end of their journey, and exciting very favourable impressions of the new colony of South Australia for pastoral purposes. Great quantities of gypsum, and some specimens of a nitrate of soda, are seen on the shores of Lake Victoria, and perhaps more of this mineral salt may be discovered in the progress of the settlers. It is in a similar country, the desert of Atacama, that so much is found and brought to England from the various ports of Chili and Peru.

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* Thistle Island is twelve miles in length, and is situated at the entrance to Port Lincoln. It is occupied by the South Australian Company as a bay whaling station. It was named after Mr Thistle, who was drowned here. Smaller islands, or islets, near it, are named after the six seamen who perished with him—Grindall's, Hopkins', Smith's, Williams', Taylor's and Lewis's Islands.

"The climate of South Australia, (continues Mr James) for eight months of the year, is as fine and salubrious as any person can desire or imagine. From April to November it may challenge comparison with the most favoured regions of the globe, and is in every respect suitable and even delicious to an Englishman's tastes and feelings. I have sometimes in the mornings of April and May, whilst inhaling the pure and balmy air of Mount Lofty, felt a positive pleasure in mere animal existence, in the act of breathing. In this month a fire is comfortable at night and morning, and in June, July, and August, it is comfortable all day. In the latter end of March, April, September, and October, the temperature is delightful—neither hot nor cold—you do not perceive whether there is any fire in the room or not, or whether the window is open or shut; but from the latter end of November, all December, January, February and part of March, the heat is oppressive and almost intolerable. I have seen the thermometer in these uncomfortable months, in a dark room nearly closed up, and with a thick roof of thatch over it, as high as 96°! not once but a dozen different days; and if the instrument is hung upon a wall in the direct beams of the sun, it rises to 140°. This is a degree of heat I never remember to have felt in any part of the tropics even; it dries up every thing: not merely the few running streams that in winter come from the mountains, but all garden vegetation; and so pulverises the dust about the camp at Adelaide, that it is reduced to an almost impalpable powder, and penetrates every article of clothing, from its extreme fineness, whilst as much caution is requisite in stepping across the road, as if a person were going through the muddiest part of Piccadilly or Whitechapel. Of course the tiny little Torrens all but vanishes before such a sun; in the few places where it runs at all, there would be plenty of room for the whole of it to run through an Irishman's hat; and a far better river is made every day in the London streets when the parish turn-cock opens a plug. There are, however, several pretty good holes which have too much water in them to be entirely exhausted by the sun's heat, and it was on account of these water holes that the town was placed in the unfortunate situation. The eastern wind, which is the cool and constant wind in summer, blowing through Bass' Straits, over the great lake, and which becomes a strong sea breeze at Port Lincoln and Encounter bay, is never felt, with its refreshing coolness, at Adelaide, because the township is placed close under the West side of Mount Lofty; and it is the absence of this summer sea breeze which occasions such an excessive heat as now described. In the latitude of 35° such a degree of heat is unknown, and unlooked for, and must entirely be attributed to the inland character of the town. Thus in New South Wales, the town of Parramatta, though only fifteen miles from Sydney, not getting the sea breezes regularly, and being very little elevated above the waters of Port Jackson, is often 20° degrees hotter than it is in Sydney, at the same moment of time. And as misfortunes never come singly, the few wells about the settlement of Adelaide became dry: the scarcer the water the more you want it for washing; and the fine particles of lime-stone dust carried up in numerous whirlwinds about the plain fall into one's eyes, and a three months' attack of ophthalmia is the frequent consequence. Half the people you see have got bad eyes, the dandies even wearing veils; but it may be very reasonably doubted whether they do not produce more harm than good. This is the only drawback to the climate, and would never have been experienced had the gallant Colonel had much experience in new colonies, or even had he followed the intentions of the commissioners. The soil of South Australia, as far as the country has been explored, is superior to that of New South Wales and Van Dieman's Land; that is, there does not appear to be so large a proportion of bad soil as compared with good, as so notoriously obtains in the older colonies, where out of twenty acres it may generally be reckoned all over the territory that one acre is good and nineteen bad. It is, generally speaking, far superior in South Australia, and the friends of the surveyor-general have stated, that he chose the situation of the town for the richness of the soil, though it is the first time most likely in the history of colonization that such a reason has been adduced. There is an abundance of good soil all over the Cowandilla plains, stretching from the foot of the mountains to within a mile or two of the Mangrove swamps on the edge of the saltwater creeks. In short there is more good soil than will be required for many years to come; it is generally composed of a rich loam, averaging about nine inches thick, on a substratum of coarse calcareous rock, and through the whole extent of the plains round the settlement gives evidence of having been at no very remote period covered by the sea, every stone you pick up being a part of the rock, and exhibiting a congeries of little shells. Over the hills, the soil and vegetation is still finer, and the author visited a tract of country between the mountains and the mouth of the Murray, that seemed to contain nearly 100,000 acres of excellent rich soil, in many places ready for the plough. At the head of the gulf St Vincent the land gets low and swampy, and at the time of spring tides is overflowed to a great extent, and exhibits a waste of waters. Towards the hills about Cockatoo valley, and the Para river, the soil is again high and dry, of a rich chocolate colour, and capable of growing any thing. Indeed there can be no doubt that South Australia will in time be a very abundant country. If the settlers will economize water, and find some means of keeping it when it falls, and not let it run away, they may in a few years luxuriate in all the good things of this life. Whatever is to be seen of vegetable produce in the markets of Lisbon or Cadiz, Sicily or Algiers, the settlers in the new colony may equally command. It is peculiarly the country of the grape and melon, oranges and lemons, figs, olives, pomegranates, and loquets, and then at its present infant state produces as fine melons as the Levant. The author saw at the governor's table one 18 lb., and another weighing [illegible] lbs. and handsomer and finer flavoured fruits could not be seen. But the character which stamps the South Australia climate as most valuable in the eyes of the settler, is its peculiar adaptation to sheep farming and the growth of wool. By a register kept very accurately at Government house during the whole of the year 1837, it rained [illegible] days, and was fine and clear 250; and this may be reckoned upon as a fair average of a series of years. In the west of Scotland it generally rains [illegible] days, and is fine only 163, and many of these days are lowering, with the sun obscured, so that the comparison in this point of dryness is very much in favour of South Australia. It is this peculiar character of the climate which ought to recommend to the cautious settler, sheep husbandry over every other sort of rural industry, the profits of which, if steadily persevered in, will remunerate him in a few years for all the inconveniences of a bush life. This species of farming has been the making of New South Wales, and will be the grand pursuit of the settler in South Australia, which will soon rival the older colony in the fineness if not in the quantity of its wool. This dryness of the climate has also a most favourable influence in the general health of the colony; for except the ophthalmia before complained of, the writer saw nothing indicative of disease. The inhabitants may be said to live almost constantly in the open air—retain for a long time their English ruddiness of complexion—appear free from the prevailing diseases of New South Wales: viz. the dysentery and influenza, and even the children, when kept clean, a very difficult matter in summer time, look plump and chubby."

It was in 1831 that the colonization of South Australia was originally projected; but it was not till 1834 that an act passed the legislature to that effect. By this enactment, South Australia became a crown colony under a governor and legislative council till the population should amount to 50,000, when it is to have a local constitution. Ten commissioners were appointed to carry the act into effect. The most novel feature in the act was a provision for equalizing the supply of capital and labour. It was ordained that the commissioners should not sell the land *under* twelve shillings per acre, and that the proceeds should form a fund solely for the purpose of carrying out free labourers to the colony. Thus the money obtained for the land was to be devoted to the encouragement of emigration. It was settled by the act, that no convicts shall ever be transported to the colony, or allowed to enter it. The commissioners issued their first regulations for the sale of land in June, 1835, at the rate of one pound per acre. They were required by the act to raise a fund of £35,000, but considerably less than the half of that was realized by the sales effected, as £1 per acre seemed to be considered too high by the public. At this time, the newly established South Australian company, with an immense capital, offered to purchase the remaining lots of land, if the price were reduced to twelve shillings per acre. To this proposal the commissioners consented, at the same time giving previous purchasers the benefit of the reduction, by proportionably increasing their land; and thus the required investment was secured.

On the 24th of March, 1836, the Cygnet sailed from Gravesend, being chartered by the commissioners for the purpose of carrying out part of the surveying staff, and for use in the colony during the progress of the survey. The Cygnet carried out the deputy and five assistant surveyors, the harbour-master, store-keeper, and a surgeon; also several labourers to assist in the surveys, and some gardeners. On the 1st of May following, the brig Rapid, purchased by the commissioners as a surveying vessel, left the city canal, and sailed direct for Nepean Bay, Kangaroo Island, where she arrived, being a fast sailer, on the 20th of August, 1836. The Rapid carried out the surveyor-general, colonel Light, who, having served with great distinction many years in the navy as well as the army, was appointed to the command of her, and entrusted with the important duty of selecting the site for the capital of the province, and to mark out the ground for the first town, before the arrival of the governor and the main body of emigrants. The Rapid also carried out two assistant surveyors, a surgeon, and a few labourers, and had on board a set of surveying instruments, with provisions for twelve months, besides clothing, ordnance stores, surgical instruments, medicines, &c. The Cygnet arrived at Nepean Bay on the 11th of September, 1836, and there landed the store-keeper, gardeners, and females, and disembarked such stores as would not be required during the surveys. On reaching Nepean Bay, colonel Light took command of the whole expedition, and after examining Kangaroo Island, and exploring the entire eastern coast of Gulf St Vincent, he visited Port Lincoln in Spencer's Gulf, where the Buffalo, with the governor and principal officers of the colony on board was expected; but upon examination, it was found that in the immediate vicinity of this port there were no requisites whatever for a capital. There was no good or clear land, and but one spring of water, and that below high water mark. These circumstances, therefore, together with the difficulties and dangers encountered at the entrance of the Gulf and in the immediate vicinity of Port Lincoln, determined the surveyor-general upon fixing the site for the capital on the eastern coast of Gulf St Vincent, whither he immediately returned. The Buffalo anchored at Holdfast Bay in St Vincent's Gulf on the 28th of December, 1836; and on the same day his excellency the governor landed, escorted by a party of marines, and accompanied by the various official personages who had gone out in the Buffalo, together with the ladies of their several families. They were received by the officers and gentlemen who had previously arrived, and fixed their habitation on the plain. His Excellency met the other members of council in the tent of the colonial secretary, where the orders in council, erecting South Australia into a British province and appointing the colonial officers, were read, as was also his Excellency's commission as governor and commander in chief. The customary oaths were administered to the governor, members of council, and other officers present. The commission was afterwards read to the settlers, of whom about three hundred were present, and the British flag displayed under a royal salute. The survey of the town of Adelaide having been completed on the 10th of March, 1837, the representatives of the preliminary sections were put in possession of their allotments on the 23d, and on the 27th of the same month the remainder of the 1000 acre sections of which the capital consists were sold by public auction, realizing an average of £6. 0s. 9d. an acre.

By 1837, the value of town land had risen prodigiously; some allotments having been sold for £80 per acre, and for others, better situated, £160 has been offered and refused. It has been objected to the site of Adelaide, that it is too far removed from the harbour, or Port Adelaide, a distance of six miles. But the objection is obviated by the fact that Adelaide is situated on a small stream, (the Torrens) where water is procurable at least during a portion of the year, and in the midst of a fertile country. The ground between the town and the harbour, also, is a dead level, so that a communication could readily be established between the places by means of railway or canal. Port Lincoln, however, seems destined, by most accounts, to supplant Adelaide, at no distant period, as the commercial capital of the colony. The town of Adelaide, situated on the little river Torrens, is laid out on a most extensive scale, but consists at present of houses and stores scattered here and there, chiefly of the cottage order, and composed of very miscellaneous materials. From the rapid increase of monied emigrants, there is a great demand for artizans, and wages are high, but provisions are almost proportionably dear. While the tradesman receives from 10s. to 15s. a day, he has to pay 1s. 4d. for his pound of beef, and 2s. 6d. for his pound of butter. The population of the town in January 1839, was above 3000, but of course, in a place undergoing such speedy evolutions, no statistical statements can hold accurate for a single month. The country around, like New South Wales, is peculiarly adapted for the pasturing of sheep. Since 1837, several thousands have been brought from Van Dieman's Land, and large flocks of sheep and cattle have made overland journeys from Sydney to the colony, not, however, without considerable loss of stock from want of water on the way.

Between South Australia and New South Wales lies a region recently explored by Major Mitchell, and called by him, from its extreme beauty and fertility, *Australia Felix*. This is indisputably the finest district yet discovered in all Australia. "Unencumbered with too much wood," says Major Mitchell, "yet possessing enough for all purposes, with an exuberant soil under a temperate climate; bounded by the sea-coast and mighty rivers, and watered abundantly by streams from lofty mountains; this highly interesting region lay before me, with all its features new and untouched as they fell from the hand of the Creator!" "Every variety of feature," he continues, "may be seen in those southern parts, from the lofty Alpine region on the east, to the low grassy plains in which it terminates on the west. The Murray, perhaps the largest river in all Australia, arises amongst these mountains, and receives in its course various other rivers of considerable magnitude. These flow over considerable plains in directions nearly parallel to the main stream, and thus irrigate and fertilize a great extent of rich country. Falling from mountains of great height, the current of these rivers is perpetual, whereas in other parts of Australia, the rivers are too often dried up, and seldom deserve any other name than chains of ponds. Hills of moderate elevation occupy the central country between the Murray and the sea, being thin or partially wooded, and covered with the richest pasturage. The lower country, both on the northern and southern skirts of these hills, is chiefly open; slightly undulating towards the coast on the south, and, in general, well watered. The grassy plains which extend northward from these thinly wooded hills to the banks of the Murray, are chequered by the channels of many streams falling from them, and by the more permanent and extensive waters of deep lagoons, which are numerous on the face of these plains, as if intended by a bounteous Providence, to correct the deficiencies of a climate, otherwise too dry, for an industrious and increasing people by preserving in these abundant reservoirs, the surplus waters of the large river; and, indeed, a finer country cattle stations than this, can scarcely be imagined. In the western portion, small rivers radiate from the Grampians, an elevated and isolated mass, presenting no impediment to a free communication through the fine country around its base. Hence that enormous labour necessary in order to obtain access in some parts, and for crossing contiguous ranges to reach others, by passes like those so essential to the prosperity of the present colony, might be in a great degree dispensed with in that southern region. Towards the sea coast on the south, and adjacent to the open downs, between the Grampians and Port Philip, there is a low tract, consisting of very rich black soil, apparently the best imaginable for the cultivation of grain in such a climate. The high mountains in the east, have not yet been explored, but their very aspect is refreshing in a country where the summer heat is often very oppressive. The land is, in short, open and available in its present state, for all the purposes of civilized man. We traversed it in two directions, with heavy carts, meeting no other obstruction than the softness of the rich soil, and in returning over flowery plains and green hills, fanned by the breezes of early spring. I named this region Australia Felix, the better to distinguish it from the parched deserts of the interior country, where we had wandered so unprofitably and so long."

Australia Felix may be said to embrace all the territory east from the mouth of the Glenelg as far as the mouth of the Snowy river in 148½° east, the Murray being its northern limit. One remarkable feature in its geography is, that the whole water communication of the territory of New South Wales flows into it. Not far distant from this beautiful country, which is destined at no distant period to outrival the other colonies, are Portland Bay and Port Philip. *Portland Bay* is surrounded by settlers, and already exports potatoes, sheep, and cattle to South Australia. *Port Philip*, called after Captain Philip, the first governor of New South Wales, is an immense bay nearly opposite to Van Diemen's Land. Upon it is situated the thriving town of *Melbourne*, which contains a population of above 2000 inhabitants. Melbourne is built at the falls of the river Yarra Yarra, and is supplied at all seasons with plenty of fresh water. The country beyond it is rich and fertile. Immediately below the town is the port, where a considerable traffic is carried on with the ports of Launceston, Hobart Town, and Sydney.

Western Australia. The western coast of Australia consists of Endracht's Land, discovered in 1616 by Dick Hartog, in the ship Endracht; of Edel's Land, discovered in 1619 by a Dutch navigator of that name; and of Leuwin's Land, discovered in 1622 by the ship Leuwin. The coast was surveyed by Dampier and Vlaming, and afterwards by Flinders, Baudin, Péron, and Freycinct, all whose reports were unfavourable. It extends for [illegible] miles, and consists mainly of a ridge of low steep rocks bordering on a sandy shore, accessible to boats in only a few points. There are occasional rifts in the rock through which torrents pour during the rainy season, but vegetation is either entirely absent or its products are useless. The two most important openings are those made by Shark's Bay and Swan River. Shark's Bay penetrates deep into the coast, with many windings, and would make an excellent harbour, but for the total absence of fresh water. In 1826, the Swan river was explored for fifty miles by Captain Stirling, and the report made of the country on its banks was so highly favourable, that it was resolved to establish a settlement upon it. A colony on the western coast of Australia had been long an object of desire on account of its shorter distance from Britain than the east coast, and of its fine geographical situation to the Mauritius, the Bay of Bengal, Batavia, Singapore, Manilla, and Canton. A project for the formation of a *new colony at Swan River*, without making it a penal settlement, was accordingly issued in 1829. By this project, the government did not propose to incur any expense in conveying settlers to the new colony; but such persons as were to arrive there before the end of the year 1830 were to receive, in the order of their arrival, allotments of land, free of quit-rent, proportioned to the capital which they were prepared to invest in the cultivation of the land, at the rate of forty acres for £3. Those who incurred the expense of taking out "labouring people," which included women and children above ten years of age, were entitled to 200 acres of land for every such person. Captain Stirling was appointed lieutenant-governor of the settlement, with a grant of 100,000 acres; and Mr Peel received 250,000 acres, on condition of taking out 400 emigrants. In August, 1829, a number of settlers began to arrive at Swan river, and to locate themselves along the banks of the Swan and the Canning rivers. By the end of the year, there were in the new colony 850 residents, and 440 non-residents. The emigrants at first experienced great difficulties and hardships; the land near the coast was found to be poor and sandy, and, on the whole, Swan river did not fulfil the promise of its sanguine patrons. However, the town of Freemantle was founded at the entrance of the river; Perth, the intended capital of the colony, about nine miles inland on its right or northern bank; and Guildford about seven miles further east. A town called Augusta was founded at Blackwood's river, near Cape Leuwin, and a portion of the settlers located at St George's sound (lat. 35° 6′ 20″ S. long. 118° 1′ E.) near the south-west extremity of Australia. The Swan and Canning discharge themselves into an estuary nine miles long, and from three to four broad, called Melville water. The entrance to this estuary is over a bar of rocks, with a depth of only six feet at low water; the bar extends about three quarters of a mile, when the water deepens from four to six fathoms near the shore, and upwards of eight towards the centre, continuing thus for some miles, making a fine harbour, if a canal were cut so as to admit of large vessels. The Swan is navigable for boats as far as the tide flows, viz. forty miles. At Perth, it is half a mile wide, but shallow. The Canning falls into the Swan a little below Perth, on the opposite side, and in most of its features resembles that river, but is smaller. Between Perth and Freemantle the land, in an agricultural point of view, is almost worthless, if we except a few small spots; the greater portion of it consisting of sands or sandstone covered with trees and underwood. Other parts of the settlement, however, can boast of good land, on which depasture many thousand sheep. But the colony of Swan river cannot be said, on the whole, to be thriving; and indeed, though it may come to prosper in the course of time, it must be considered for the present, when compared with the expectations of those who founded it, a decided failure.

AUSTRIAN EMPIRE. (*a.*) Great difficulty attends an attempt at a statistical survey of the resources of Austria, owing to the care taken by the government to conceal official, and especially numerical, details, the betrayal of which is looked upon as a crime only second to high treason. Works, it is true, exist, which profess to give minute information on all subjects connected with the government and the country, but they are either deficient in every important particular, or, from the known strictness of the censorship on this head, exposed to the suspicion of wilful misrepresentation. Still, we shall submit to our readers what information we have been able to collect.

The archduchies of Upper and Lower Austria, Styria, and Tyrol, in which the inhabitants may be considered as exclusively German, contain 3,757,368 souls, scattered over a territory of 1710 square geographical miles, giving consequently a population of 2197 per square mile. This scanty population is owing to the mountainous nature of these districts, the average quantity of arable land and vineyards in these provinces giving only 1764 square Vienna *joch** in the geographical mile. The remainder of the surface is mountain, forest, and marsh land. The mountainous districts are, however, by no means wholly unproductive; rich mines of salt, iron, and copper, are scattered through them, and extensive tracts are used as grazing land; but it is evident that the population is on the whole not sufficiently numerous either to draw the full advantage from the land, or to assert any political supremacy over the other provinces. The influence of the centralizing system of government and of fashion, which draws the wealthy inhabitants from the provinces to the capital, alone allows Austria to be counted among the Germanic states of Europe. About 2,500,000 Germans are calculated in the other provinces of the empire as colonists, military and civil functionaries, &c.

The largest portion of the inhabitants of the empire are Sclavonians, who may be classed under four heads:—

Bohemians, Moravians, Silesians - -	5,802,750
Poles - - - - - - -	4,445,000
Hungarian Sclavonians, including Dalmatia -	4,200,000
Illyrians and Carinthians - - - -	1,300,000

amounting together to 15,747,750 souls, or a number nearly equal to the total sum of all the other nations in the empire taken together; viz.—

Germans - - - - - -	6,200,000
Hungarians (Magyars) - - - - -	4,500,000
Italians - - - - - -	4,650,000
Wallachians - - - - - -	1,800,000
Jews - - - - - - -	475,000
Zigeuner (Gypsies) - - - - -	110,000
Total	17,735,000

The Sclavonian inhabitants, important as their numbers and geographical situation ought to make them, have ever been treated with the least consideration by the German rulers. In the present state of the empire they form two distinct and extensive divisions, one to the north and the other to the south of the Danube, between which the Germanic territories lie inclosed in the form of a wedge. The northern Sclavonic mass, including Bohemia, Moravia, Silesia, Gallicia, and the north-west quarter of Hungary, contains a population of about 12,500,000 souls, speaking three or at most four dialects of a common language, none of which differs from the other so much as the Danish tongue does from the High German. A traveller possessing a moderate knowledge of the Bohemian or Polish, which are the only written dialects, can travel with ease and make himself understood in all the other Sclavonic districts. But, though possessing so remarkable a bond of union, and long involved in the common fate of subjection to strangers, there seems never to have existed anything like a wish to draw together for mutual support or defence. This may partially be explained by the circumstances in which these different countries were at the time of their incorporation into the Austrian empire. The Bohemians had long considered themselves as forming part of the German empire, and in their rivalry with the other provinces seem to have been in some degree ashamed to assert their nationality. Until lately no Bohemian of the higher classes studied his native tongue, and all were in general flattered by being taken for Germans. They consequently had but little sympathy with their unpretending brethren, the Slowacks of Hungary, joining in the supercilious but groundless contempt which the Hungarians of Tartar descent express for them.† The Poles were long too much occupied with the hope of restoring the independence of their country within its former limits, to look beyond the Carpathians; and, indeed, it was not until the weight on all was increased, as it has been of late years, and all hope of external help cut off, as it at present seems to be, that any of the nations in the territories we have alluded to thought of looking upon their neighbours and fellow-sufferers as brothers and supporters.

Within the extent of country we have described, every mountain, every river, every town, every village, bears a Sclavonic name; a sufficient reason to make strangers, of whatever nation, despair of success in converting the inhabitants into Germans or Hungarians, or in making them assume any foreign language or manners. Many things [illegible] have contributed of late to promote a feeling of nationality on an enlarged basis amongst them. All these nations, isolated from the rest of Europe by the Austrian policy, were thrown more upon their own internal resources, which they have considerably improved. A natural consequence has been a relative improvement in the state of these different provinces, exactly proportioned to their respective means. In Bohemia, where the average of the population gives 4133 inhabitants to a square geographical mile, and where the soil is much less productive than in Moravia and Gallicia, manufactures have been introduced with considerable success. An interesting work on this subject shows that Bohemia possesses seventy-five glass-houses, of which twenty produce plate-glass; 126 paper-mills; and a great number of iron, copper, and lead works. The quantity of lead produced by the mines in 1834 was, 1321 tons; of arsenic, 61 tons; of iron there was produced, rough 11,027 tons, and 9738 tons. The manufacture of percussion caps for guns and cannon is carried on extensively, 65,000,000 caps being produced annually. In the year 1835, 14,000 tons of beet-root were manufactured into 7,500 tons of sugar; 120,000 cwt. of flax into linen; 30,000 spinners produced [illegible] cwt. of cotton yarn; and 1,400,000 pieces, of from twenty to thirty-five yards, were printed; [illegible] cwt. of wool was manufactured, and 5200 looms produced [illegible],000 pieces of woollens from fourteen to twenty yards per piece. Various other branches of industry are attempted with more or less success, and sufficiently demonstrate the industrial spirit of this part of the empire. It must, however, be confessed that the above statements respecting this province, together with its very considerable agricultural produce, are far from giving a true idea of its productive power. The Austrian National Encyclopædia estimates its farming produce as follows:—

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* Equal to 101,518 French hectares.

† The Hungarian proverb says, "Tot nem ember" (The Slowack is no man.)

"Wheat, 3 millions Metzen, (1 Metzen = 1·72 bushels English); rye, 15 millions Metzen; barley, 6½ millions Metzen; potatoes, ——; wine, [illegible] Eimer, (the Eimer = 15·9 gallons English); [illegible],000 cubic toises of fire-wood. The amount of live stock, which is on the increase, is 142,036 horses, 243,779 oxen, 650,779 cows, 1,590,672 [illegible]. Game of the choicest kind in incredible quantities, stags, roebucks, wild boars, pheasants, woodcocks, &c."—i. 336.

Bohemia must be looked on as the most flourishing province of the empire. The nobility is enlightened and public-spirited, and pains are taking to ameliorate the condition of the lower classes. The number of forty grammar schools and 2556 peasants' schools gives one of the former for 95,000 inhabitants, but of the latter one to 1120 inhabitants. The middle classes are unfortunately possessed with a passion for entering into the innumerable government bureaux, which drain the country of so much talent and exertion, a loss which would be more seriously felt, if the sway of the noble landed proprietors were less mild, and the spirit of industry less spread among the lower orders.

These remarks may be extended in a general way to all the other Sclavonian provinces, which, although possessing sources of inexhaustible wealth, make but slow advances, owing to the same restrictions. A national spirit is however awake in all, and the education of the peasants has become an object of serious attention, the example of Bohemia rapidly spreading to the neighbouring Sclavonic districts. In the Slowack country, public-spirited individuals have established schools, the Hungarian constitution enabling them to do so unimpeded. Gallicia alone remains behind in this race of improvement, the government not establishing, and the influential men neither demanding, nor, indeed, seeming to wish for, schools for the improvement of the lower ranks. Some provinces, [illegible], labour under peculiar grievances of their own.

In Gallicia the whole weight of the iron sceptre of Austria has of late years been doomed to fall. [illegible] was the insurrection in the kingdom of [illegible] completely subdued, and the means of future [illegible], as far as the Russians could discover [illegible] eradicated, than the lenient policy which [illegible] had shown towards the Gallicians changed. [illegible] Lobkowitz, whose humanity and prudence [illegible] the province for the empire, was re[illegible] the Archduke Ferdinand; and a system [illegible] proceedings has for the last three [illegible] carried on, which has totally alienated [illegible]ment had begun to spring up among [illegible] towards their new rulers. The object [illegible]ment in all these proceedings is an [illegible] mystery. It is true that the people of Gallicia manifested, in 1830, the most ardent sympathy for their brethren at Warsaw, and immense supplies of money and provisions were daily sent over the frontier. The governor, aware of his inability to suppress the working of these natural feelings, wisely chose to wink at such irregularities, rather than expose the province to the dangers arising from still greater excitement, if he forcibly attempted to restrain them. Thus, when the storm had passed over, the Gallicians could only rejoice with trembling that it had not overwhelmed them in its career; while they were gratefully sensible of the mild treatment they had experienced from rulers whose apprehensions seemed likely to dictate a very different policy. This was the moment for a prudent minister to seize to attach such an important province to the government by the strongest ties. But, so far from thus improving the opportunity, researches were gradually made after individuals, who had either served in the revolutionary army, or carried on correspondence with Poles in the Russian territories. These inquiries were also instituted with all the wanton harshness of delegates in a remote part of the empire, and screened from public opinion by the secrecy of their proceedings. Men of all classes were summoned to Lemberg; members of the most illustrious houses,—peasants, whose poverty and ignorance were no match for the intrigues of such an inquisition,—and Jews, whose helpless situation exposes them to every species of tyranny—were compelled to spend months in attendance on this tribunal; and the scourge of the executioner is said to have been frequently used in secret to quicken the confessions of tardy witnesses. Every day saw transports of prisoners in irons, under military escort, travelling towards Lemberg, many of whom died in prison; while those who, after a long delay, and being exposed to every insult, were at length released, received no other satisfaction than the certainty that all these inquiries had led to no result. Not a single trace of any thing like a serious conspiracy against the Austrian state could be discovered, nor could any thing worthy of publication, still less of punishment, be tortured out of the imprudent marks of sympathy shown by the most unwary to their suffering countrymen who had taken refuge among them. The greater part of those who laboured under the heaviest suspicions were set at liberty, ignorant, for the most part, of the charge intended to be substantiated against them, and against which no means of defence could consequently be provided. The province in the meantime was treated as if it had been in a state of actual revolt. Upwards of 50,000 regular troops were quartered through it, and instructions were given to the officers and civil *employés* to mix as little as possible in social life with the inhabitants. The effect which such treatment must have produced upon a high-spirited people it is easy to surmise, and the government, when tired of so useless a system of rigour, will probably be unable to discontinue it when it shall desire to relax.

The Sclavonian population of the southern states of the empire are not less favourably situated, being in possession of the long tract of mountainous country which stretches eastward from Tyrol, following the course of the rivers Save and Drave, from which a branch, diverging at right angles, runs south along the sea-coast through Dalmatia. The provinces of Carinthia, Carniola, Istria, Dalmatia, Croatia, Sclavonia, and what is called the military frontier, are peopled by Sclavonians, with the ex ception of the principal towns; and, although the state of civilization varies so much in each of those provinces, still there is a spirit of nationality prevalent amongst them, which makes them fraternise like men having common interests. The military frontier, Croatia, Sclavonia, and Dalmatia, form part of Hungary, and have a prospect of waiting sometime, if the improvement of their social state is to depend on the general progress of that country. Istria, Carniola, and part of Carinthia, may, with the exception of some mountain districts, be considered as equally advanced in cultivation with Bohemia. It is worthy of remark that the valuable mining districts, with the exception of those of Transylvania, lie all in Sclavonic districts, the Sclavonians, as original inhabitants of the country, having probably maintained their ground in the mountainous chains which limit and intersect the empire. Although mining is carried on to a considerable extent in these latter provinces, the mines of Istria alone furnishing a large sum annually to the imperial treasury, yet it is probable that the entire riches of these mountainous districts are far from being ascertained. There is, perhaps, no spot in Europe so remarkable for singular natural varieties, nor any so little travelled, even in our curious age, as the chain extending from Carniola, through Croatia, into Hungary: the want of roads, but especially the depression of all individual exertion by vexatious *bureaux* and restrictive laws, prevent the inhabitants from seeking new sources of industry, as well as from turning those already discovered to the best account. In Carinthia are mines in which native steel is found, and yet the English manufactured steel is sold cheaper at Trieste than the mines can afford to deliver their produce* at that city. Many similar instances of undeveloped resources might be adduced from different parts of the empire, but no where are they so striking, on account of the vicinity of the sea, and the consequent facility of finding a market for produce of all kinds. The Sclavonian population of these provinces is said to amount to 2,500,000 souls; the dialect they speak is more ancient in its grammatical forms than that of the Bohemians and Poles, and bears more resemblance to the Russian and Servian.

The race of inhabitants of Tartar descent, who, under the name of Magyars, claim the moral, although by no means the numerical, supremacy in Hungary and Transylvania, are distinguished from the other nations of the empire by an energy of character which has only lately taken a useful direction. This valuable pre-eminence they owe to their invincible attachment to their old institutions, which, imperfect as they are acknowledged to be at the present day, have kept alive the pride and energy of the people, while the nations around them have sunk into a melancholy indolence and supineness. In number not exceeding 4,500,000, and surrounded by Sclavonian and other tribes to the number of 6,000,000, they maintain an undisputed superiority within the country, and have even formed the chimerical notion of forcing their language and manners upon the rest of their fellow-countrymen. But a more useful and nobler direction has within a few years been given to their exertions by the patriotic spirit of some distinguished men, among whom the most conspicuous at present is Count Stephan Szecseny. This nobleman has almost single-handed, in opposition to all the direct and indirect impediments which a blind and jealous government and rude national prejudices could raise against him, opened a steam communication from Presburg to Constantinople, thus furnishing his country with a new and valuable field of enterprize, at a moment when the endeavours making to draw a portion of the trade of the East once more over Asia Minor to Europe give a cheering promise of prosperity likely to accrue to his country by his means. He is accordingly looked upon as its greatest benefactor at the present moment, although suspected of not being warmly attached to that kind of reform which would raise the lower classes of his fellow-citizens in the social scale. It is, perhaps, also for this reason that he has been able to avoid direct collision with the government, which views every step taken for the advantage of Hungary with a jealousy natural to those who prefer a weakness which they can easily guide to a strength that they might have cause to fear. The happy idea of attracting foreign trade into Hungary, by way of the Danube, must in a short time show its effects by encouraging the spirit of adventure, which the natives possess in abundance, to strike into that useful channel; and, if prosecuted on a liberal footing, may enable them to assert their own rights against the encroachments of the Russians, which their government seems inclined to neglect. This jealousy of Hungary must be conceived in its full force, before indifference on the part of the Vienna cabinet to the Russian settlement at the mouth of the Danube can be imagined; for, according to all western calculations, the stoppage of this grand outlet for the productions must inflict a much more serious wound on the future prosperity of the empire at large than even the contagious neighbourhood of a powerless republic could on its political tranquillity; while the possession of Cracow, should it eventually be conceded, will, we fear, prove but a poor indemnity for immeasurable sources of wealth which it will be impossible to cultivate without such a channel of communication with foreign lands.

The Magyars have, as it is, valuable rights. Their language is used in all public transactions, and their nationality fully respected. No passports are necessary within the country, in which they are not overburdened with *bureaux*, like the other provinces. Separate chanceries at Vienna transact the business of Hungary and Transylvania, and their diets impose only the taxes of which they approve, and with which they are by no means liberal. In return for this exemption, every thing Hungary exports is loaded with a heavy duty, even on its portation into the other provinces.

If the Sclavonic nations of the empire have reason to complain of the little care taken to consult their national customs and feelings, it may be imagined that the Italians are scarcely less exposed to annoyance on this head; not that they by any means stand on the same footing with the Sclavonian nations, for the Italian language is used in all the public offices and courts of justice in the united kingdom of Lombardy and Venice. The Austrian code of law has been translated into Italian, and is studied in that language at the universities; and the Italian jurists have also contributed very much towards its improvement

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* The steel hanging bridge across the Danube canal at Vienna, suspended from only two main chains, one at each side, is the only one of the kind in Europe.

Still, as the finer feelings in an enlightened nation are spread through a wider circle of its population, and many things are for them oppressive of which a less cultivated people would scarcely be sensible, there can be no doubt that the invincible hostility they bear to their present rulers is not without foundation. The repressing character of the Austrian sway, under which mediocrity makes the greatest progress, while talent and energy are looked upon as two disturbers of the public peace which cannot be subjected to sufficient control, is little suited to the tastes of an ardent people, among whom democratic ideas have descended as a legacy from the flourishing days of their state. Many concessions have been made by the Austrians, in order to conciliate the inhabitants, especially of the cities, where the direct taxes upon industry are much lower than in the provinces northward of the Alps: but the same system of innumerable bureaux, and the same destructive institutions of monopoly, weary out the aspiring spirit, and cramp the nerves of enterprize. Yet the Italian provinces must be reckoned among those whose subordination depends upon the presence of an imposing military force; and, to the skill with which the government subdues the discontented of one province by the power it borrows from another not much less dissatisfied, it is indebted for the effective subjection in which all are retained. But an armed force, of even more approved reliance than Austria could muster, would never have succeeded so completely in establishing the power of the government in a manner which renders all thoughts of resistance so hopeless that they are abandoned on all sides. Much subtler, though, as it would appear, more expensive, checks on the ebullitions of popular spirit have been forged, the tendency of which is at the present to tame the refractory by presenting innumerable obstacles to every attempt at innovation, and eventually to destroy all dangerous energies so timely, by means of early training, that the task of governing shall be rendered easy, and restraint robbed of its bitterness.

The undisputed sovereignty of the emperor in every province is the first demand upon the subject, and as the royal person is multiplied in each by thousands of representatives, the duty of submission and respect is one of those most frequently called into practice. It is part of the plan of government, in every German state, to employ one half of the nation to govern the other; and the paternal care of the sovereign is studious to prevent the number of *employés*, who live at the expense, and, as they doubtless imagine, for the benefit of their fellow-subjects, from being diminished. The Austrian state *Schematismus* presents a list of upwards of 25,000 individuals bearing appointments in civil offices, and the number of those whose appointments are either of too low a rank, or of [illegible] a nature, to be introduced in company with the first men of the country, may amount to as many more. Let us imagine these civil officers, dependent solely on the crown, dispersed through a country which contains so many jarring elements, [illegible] unfortunately seems to be a matter *primo* [illegible] decided, that much loyalty cannot be expected;—let us follow each of these gentlemen as [illegible] into society, anticipating defection in all [illegible] office, and necessarily disposed to vindicate [illegible] that lends him consequence;—let us add to these the number of 13,000 officers and non-commissioned officers of the staff and commissariat department, all of whom are likewise to be found within the empire, at the head of an army, which on the peace establishment amounts to 270,000 men, and we shall see that the government has monopolized, by means of these individuals and their families, a powerful number of defenders in every social circle. When we add that the secrecy observed in all transactions,—especially, however, in the administration of justice,—screens every individual from the share of responsibility which every public officer ought to incur towards the public, some idea may be formed of the fearful power thus created, and of the abuses to which it must be subject. If we conclude these officials, civil and military, to require a rather superior degree of education to enable them to fulfil their respective functions, it must be evident that an immense mass of talent is abstracted from the middle classes of the nation, which, in the pursuit of science, agriculture, commerce, or the fine arts, could not be otherwise than productive of the greatest benefits. The nature of their employments in the *bureaux* is no where of a tendency to encourage a serious cultivation of any of the above-mentioned useful sciences in the *employés*; while on the public they may be said to operate in a directly prejudicial manner, as no individual can take a step of the slightest importance in life or business, without requiring the sanction of some of these government officers, and finding no small difficulty in procuring permission to become an industrious member of society.

This leads to another grand source of influence to the government,—the system of monopoly in trade. A fact that the history of the last fifty years has sufficiently proved, is that popular tumults seldom originate amongst the peasantry of a country, and that the great problem of internal police is to keep the inhabitants of the towns satisfied and tranquil. To this end every city in Austria, beginning with the metropolis, is allowed to grant the freedom of trade to only a limited number of individuals, so that the mere fact of an apprentice having served his time by no means warrants his setting up in business. Strangers, who come into a city, must either show that they are provided with means of support, or that they can procure employment, otherwise they are at once expelled. In return for this privilege of exemption from much competition, the merchant, tradesman, &c., pays a tax of no trifling amount, bearing the candid designation of earnings-tax. In this manner the whole industrial class in Austria, being in some measure dependent on the government, which naturally has it in its power to introduce a system of competition at will, and not dissatisfied with a state of things which assures to it a certain competence apparently on easy terms, is gained for the present system. It does not seem that any exact compact exists between the trading classes and the state as to the number of privileged individuals in every branch; the butchers, however, form an exception, their number being fixed. This immunity is purchased by an extra tax called the slaughtering tax. Merchants and bankers are kept from increasing in number by its being necessary to show a certain amount of capital as a qualification for the permission to enter into trade. Whatever inconveniences arise from such a municipal system, and that they are not few in number will easily be supposed, are thought to be fully compensated for by the tranquillity which is stated to reign throughout the empire. Although numerous arrests take place annually in the different provinces, and the state prisons are full in all directions, yet, as the capital continues tranquil, the most self-complacent comparisons with other lands are constantly published, and strangers are forced, at length, to believe what they hear on all sides repeated. It is true, that Vienna bears to the eye of the stranger a most smiling appearance. The city, although small and narrowly built, is kept remarkably clean; and, no paupers being tolerated in the streets, and, indeed, all signs of pauperism being removed by the municipal and police measures alluded to above, the very absence of all the inevitable casualties of humanity has something awful in it to the considerate observer, even though he may never have heard of the artificial means used to sift its inhabitants.

The following anecdote will, however, serve to show that in Austria the same means produce the same results that they do in other countries, and that the government has found no spell to charm useful effects from measures which we should think tended to the destruction of the social state. The number of the butchers in the capital being limited, nothing was more natural than that they should conspire against the public. They were therefore compelled to submit to a monthly assise, fixed by the magistrates, according to the reports of sales furnished by commissaries, from the different cattle fairs. These magistrates, together with the commissaries, it is publicly asserted, are taken into the pay of the guild, which can afford to deal more liberally towards them than even the state itself; and the manner in which this arrangement came to light was as follows:—On the first approach of the cholera morbus to the metropolis in 1831, the court, fearing scenes of disturbance on its appearance, took measures, among other devices, for improving the state of the poor, to ensure a sufficient supply of provisions and to prevent any advance in price in the most necessary articles. Among the rest, the butchers received an advance of 1,000,000 florins of silver to buy up beasts, and to secure them an indemnity for not raising the price of meat in case of an advance in that of live stock. When the danger had passed over (no advance in the price of cattle having taken place) they were called upon to account for the sum which they had naturally not neglected to draw, and a commission was appointed to audit the accounts. It seems, however, that, after an exercise of no common ingenuity, a considerable sum remained for which no one could account, when on a sudden the sittings of the commission were broken off, and the papers disappeared. The public, however, having heard of the circumstance, some murmurs arose, and an inquiry was set on foot, at the desire of some influential officials who were not interested directly in the matter. The first sittings of the commission of inquiry led to the discovery of the enormous conspiracy existing to defraud the public and the state, in which many men holding elevated situations were more or less implicated. A panic struck the guilty, and the price of butcher's meat was reduced in the ensuing month from ten kreutzers to six kreutzers per pound. As the commission proceeded, however, the ground was found to be more and more delicate the further they pursued their researches; their case became difficult, and their steps irresolute. This was no sooner remarked by the tradesmen than, assuming an air of confidence, they threatened to shut up their shops with one accord and starve the capital, well knowing the fear entertained in certain quarters of discontent among the mob. [illegible] preparations having been made to prevent such a measure, the government was obliged to submit. the inquiry was suppressed, and butcher's meat is at the present day sold at Vienna, a city situated in one of the most fertile districts of Europe, after a succession of favourable seasons, at ten kreutzers, or 5d. per pound—the bones and fat being apportioned at the same price to the purchaser in proportion to the weight of consumable meat that he demands. This, then, is the true state of the capital, which boasts of its tranquillity, while all the other countries of Europe are disturbed by liberal factions. Let us only conceive the [illegible] tax levied daily on the inhabitants by tradesmen of all kinds, who are joined to a greater or less extent in similar combinations, and who thus [illegible] sums which ought to form a continually increasing capital, capable of being most usefully employed; let us add to this the fact that, while new inventions and the improved state of agriculture are increasing the productive power of the country, the price of the necessaries of life in Vienna [illegible] annually, while it is in the power of a few tradesmen to rouse the populace to rebellion at any moment they please, and we shall be able to judge of the degree of praise to which such a tranquillizing policy is entitled.

Another rich resource of influence for the government arises from the extensive patronage of the church. The superior dignities are stated [illegible] the Austrian Encyclopædia to consist, including those in Hungary, of eleven Catholic archbishoprics; fifty-nine Catholic bishoprics; 151 abbots and [illegible] with domains and revenues; 156 titular abbots [illegible] probsts (deans); besides an innumerable host of canons, deacons, archdeacons, and heads of convents. The monasteries have been reduced to [illegible] number sufficient for the service of the church and the care of education, but still the number of the clergy is immense, as may be inferred from the above enumeration of the hierarchy; in addition to which, the united Greek church has five bishoprics; the Armenian Catholics, one archbishopric; [illegible] schismatic Greeks, one archbishopric and [illegible] bishoprics; besides inferior dignities, all of which, together with the nomination to all parish [illegible] are either presented by the crown or under its influence. These charges are also well provided [illegible] The Austrian Encyclopædia states the revenue of the archbishop of Gran, primate of Hungary, [illegible] 360,000 florins (£36,000), but common [illegible] values the see at three times that sum. The [illegible] bishoprics of Prague, Olmütz, and Vienna, [illegible] proportionately well endowed, and, indeed, [illegible] revenues of the church, including the tithes, [illegible] compared with the price of necessaries in so productive a land, may be said to exceed in [illegible] those of the clergy in any of the great [illegible] Europe. Independently of the effect which [illegible] prospect of this golden harvest may have upon [illegible] members of the clergy, it is certain that they [illegible] upon the mutual support of church and [illegible] equally indispensable to both parties; and, [illegible] the authorities protect and put them forward [illegible] all occasions, they are not remiss in [illegible] preaching and teaching the enjoined doctrine [illegible] non-resistance and passive obedience. They [illegible] of late been considered so powerful an arm [illegible] resisting the innovations of the age, that [illegible] been planned to increase their influence, even at the risk of once more receiving a lesson which must still be too recent to be forgotten. The proposal to place the whole of the elementary education throughout the empire in the hands of the re-established Jesuits is said to have been recently discussed and approved in the council of state, but delayed, partly perhaps from the apprehension that the public mind, which is decidedly opposed to the increase of clerical influence, was not yet sufficiently prepared for so bold a step.

The peace establishment of the Austrian army is reported by the Austrian Encyclopædia to consist of 190,000 men, infantry—38,685 men, cavalry—and 17,800 men, artillery, exclusively of the staff, engineers, six garrison battalions, and seven military frontier regiments, in all 270,000 men. This force can be raised in time of war to 750,000 men, by calling out the militia battalions of each regiment, the reserve, and what is called the Hungarian Insurrection.

For the recruiting of these forces the whole empire is divided into recruiting districts, the depôt of each regiment remaining in its appointed spot. The regiments consist of three battalions of about [illegible] men each, to which two others must be added, which, under the name of militia battalions, are called out only on extraordinary occasions. The territorial distribution of the recruiting depôts is as follows:—

	Infantry Regts.	Rifle Bns.	Cavalry Regts.	Artillery Regts.
The German States, Upper and Lower Austria, Tyrol, and Styria - - -	7	4	6	2
Bohemia, Moravia, Silesia, Galicia - - -	26	6	18	3
Illyria, Croatia, Dalmatia (including the military frontiers) - - -	23			
Lombardy and Venice - -	8	2	7	
Hungary furnishes a quota granted by the Diet, but is subject to no conscription.	14		12	
Total	78	12	43	5

The troops furnished by Croatia and Dalmatia belong to the Hungarian contingent, but are included in the above survey with Illyria.

From this sketch it is apparent that the Sclavonian districts contribute by far the most to the [illegible] of the land; but although the recruiting takes place in a national manner, and the privates of the different regiments are all countrymen, care is taken that the officers be mixed as much as possible. The privates are in general fine strong men, and their arms and equipments are equal to those of any army but the British. They are drilled with [illegible], and go through their exercises with precision, but with slower movements than the Prussians and Russians; and it is perhaps on account of the numbers who understand German but imperfectly that the assistance of the *flügelmann* is still required to interpret the word of command. Of their artillery the Austrians are proudest. It is certain that it is numerous and well furnished, having [illegible] pieces of ordnance ready for service [illegible] occupation of the Roman states took place. The recruits pass through a regular course of mathematics, with practical and theoretical gunnery, and the corps of bombardiers receives all who distinguish themselves by skill and talent, [illegible] step they have a prospect of advancing [illegible]. This branch of the service is the only one which holds out this prospect, for, by a singular arrangement, in a country where the troops are raised by conscription, the regulations prohibit such promotion in the other branches. The annual practice at the target with shot and shells of all dimensions takes place in the months of July, August, and September, and is conducted with scrupulous regularity and attention. The rocket corps, under the command of General Augustin, at Wiener Neustadt, have not only much improved the composition applied to this formidable weapon, but throw it with wonderful precision and security.

It would be too much to expect from troops raised under the circumstances in which many of the Austrian provinces are placed, any thing like the spirit or *amour propre*, which prevails in the armies of France and Prussia. The whole system of discipline and treatment of the men is also different from what is in use among the other German states; the cat-o'-nine-tails being in almost unceasing employment, and not being looked on in the same degrading light as in other services. But the absence of this susceptibility is considered to be compensated for by a certain steadiness and uninquiring submission which prevail among the men, and which render them useful instruments for the government. A striking proof of this obedient disposition, and not less so of the security with which the government relies upon it, was afforded on the late occupation of Cracow, when the militia battalion of a Polish regiment formed part of the corps ordered upon that expedition.

The amount of the army estimates, as indeed that of every branch of the public expenditure in Austria, is one of the state secrets, and it would be useless to attempt calculating it, as the precise number of troops kept on foot is never known, and varies considerably even in time of peace. There are reasons, however, for believing that this department is managed with a greater attention to economy than any other. That the war-office exercises a more effective control over its agents than the civil boards can do, is perhaps owing to the strict attention paid to seniority in the service in all promotions above the rank of colonel. This naturally throws a number of men together who are actuated by a spirit of rivalry towards each other, but who receive in the indisputable command of the sovereign a constant point of union. As this council has obtained an unhappy celebrity in the history of the country, the loss of every battle since the memorable thirty years' war having been attributed to its influence, we must explain somewhat of its construction. The usual order is that the senior officer in the service fills the place of president, and has a council of five generals, with whom all purely military affairs are discussed in secret. Under the control of this council the commanders of the forces stand in peace and in war, and the difficulty of carrying on operations in the field to the satisfaction of so many directors, is said to have been seriously felt in the French wars even by the Archduke Charles, whose rank and talents were not sufficient to free him from these official shackles. His total withdrawal from all connection with the war-office is generally looked on at Vienna as the effect of disgust. Under the president eleven councillors, partly military men and partly civilians, form a council of reference and debate for the dispatch of ordinary business, and divide between them the branches of the ordnance, the quartermaster-general's and the adjutant-general's departments, the commissariat, the store-keeper's offices, &c. Four councillors of justice discharge the duties of judge advocate. The president, not being a responsible minister, has no power beyond the transmission of the directions he has received, and the councillors, being too nearly his equals in rank to depend on his personal approbation, enjoy individually a great latitude of discretion, and can only be made responsible for error or remissness after the mischief has been done. This system naturally affords a tolerable control in all the subordinate details, but destroys the energy and celerity of action which are the soul of military calculations. For this reason the Austrians were always well provided in cases which it was possible to foresee and to prepare for in time, but, when matters took an unexpected turn, and resources had to be developed on the spur of the moment, every cord to which the general trusted was sure to break under his hand.

The term which conscripts had to serve (fourteen years) has been reduced lately, and may undergo a further modification, should the prospect of undisturbed peace present itself. This and some other improvements in the army are ascribed to the influence of Count Clam Martinitz, who has for some time been the representative of the military department in the ministry.*

The other branches of the state expenditure are not less carefully concealed than the army estimates; many of them most probably are not even known, as accounts are said but seldom to be rendered to the finance minister from many departments; while two, the police and the foreign departments, are totally exempted from such responsibility. The amount of the revenue is thus, Austrian Encyclopædia, stated:—

"The revenue of the country is generally estimated at 150,000,000 florins in silver. This sum is produced by the land-tax, the earnings-tax, the legacy-duty, excise, tolls, and fiscal dues; the regalia, (to which belong the customs, stamp-dues, tobacco and salt monoply, the post, lottery, and mint profits,) and the domains. The lands of Hungary and Transylvania are, it is true, not subject to the greater part of the above taxes, but are bound to furnish for the use of the army a great number of supplies in kind."

This sum, about £16,000,000 sterling, which ought to be a comparatively small sum for a state possessing the amazing internal resources of Austria, is made to fall very heavily on its inhabitants by the manner of raising it. From the above paragraph it is evident that the principal taxes are direct contributions from the property and industry of the nation; which is, however, exposed to another severe system of taxation arising from the municipal and *bureau* system. From this last-mentioned sort of contribution neither the court nor the country derives the slightest advantage; but so deeply is it interwoven with the present state of things that nothing short of a total change of system could do away with it.

The land-tax may perhaps be considered as the most important, and is levied in every province from the possessor of the land. It amounts on an average to fifteen per cent. on the produce of the soil. The crops are not valued annually, but an average taken in the year 1834, by commission established for that purpose, is definitely fixed as standard for the archduchy of Lower Austria. In the other provinces, in which an exact measurement of the land with its gradations of culture is in progress, a provisory estimate has been assumed until the work is completed. Buildings of all descriptions in the country, in villages and towns, excepting the capital town of each province, are assessed according to their size and value, and are divided into twelve classes, the highest of which rated at £6, the lowest at about 2s. per annum. This includes all agricultural buildings and many factories, as well as dwelling-houses. The metropolis and the provincial capitals are differently rated, the house-tax in these being an assessment on the rent which the houses produce, or at which they are valued, amounting with fees and dues of all kinds to not less than thirty-two per cent of the income of the property.

The earnings-tax (Erwerb-Steuer) is one, the produce of which must bear no proportion to the detrimental effect, which, in conjunction with the system of monopoly we described some pages back, it must have upon the industry of the nation.

The payment of the earnings-tax is incumbent 1st, on the class of manufactures; 2dly, the classes of traders, especially all dealers in raw materials, and general merchants; of these there are three which pay in Vienna and the environs two (German) miles round, 1500 florins (£150), 1000 florins (£100), and 500 florins (£50 per annum; and in the provinces 1000 florins, florins, and 300 florins; 3dly, the classes of and artisans, including especially all persons ing simple licences to carry on manufactures trades, patents, &c., shopkeepers, hawkers, 4thly, that kind of industry which consists in vices rendered, or in leaving the temporary use any thing to another, for instance, teachers dancing, music, fencing, languages, keepers schools, &c., brokers, bill-brokers, agents, cates, &c. The tax paid is estimated and charged in all cases according to the nature of the occupation.

In the Lombard-Venetian provinces the tax so much modified that it does not exceed one- of what is paid in the countries north of the Alps. In Hungary no tax of the kind is paid. butchers pay in addition a slaughtering tax† of per beast, and Jewish butchers still more Jews form an especial branch of taxation. The who enter into trade are obliged to prove their property, and pay a very heavy property-tax. In Galicia a heavy impost is laid on the candles which they celebrate their sabbath, and

The legacy-duty varies on all sums above florins (£10), according to the degrees of relationship, from ten, five, to two per cent.

But not only bequeathed property is encumbered with a transfer-tax in Austria; almost all transfers of land or houses are attended with heavy for registering, &c. Such purchasers of land not belong to the noblesse are either obliged to purchase the rank, or pay some of the contributions doubled; and, even after receiving the letters patent from the emperor, high fees have still paid if the proprietor wishes to be admitted the provincial states. From this latter as we observed before, no advantage whatever is derived; but the patent of nobility, besides freeing an estate from the extra taxes, exempts the family from the military conscription.

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* The Austrian navy is under the management of a naval commandant at Venice. It consists of from thirty to thirty-four vessels of war, of which three are ships of the line in ordinary, five frigates, five sloops, eight brigs, and six schooners.

† This tax has by the last regulations been incorporated with the excise.

The excise is also a highly important branch of revenue, and embraces, 1stly, all manufactories of beer, wine, and spirits, liqueurs, malt, &c.; 2dly, provisions of all kinds carried into the metropolis and provincial capitals for consumption; 3dly, it is paid by all innkeepers, butchers, &c. in the country on the provisions they offer for sale.

The customs' duties were until lately rated so high, that the revenue arising from imported goods could not possibly cover the expense of the frontier guards and custom-house officials, while those articles which the country cannot produce in sufficient quantity, and of a quality to compete in some degree with foreign productions, are supplied in abundance by means of one of the most daring and extended systems of smuggling that was ever formed. The chief seat of this contraband trade is said to be the Lombard-Venetian provinces, and it is related as a fact that the seal of the Milan custom-house was some time back for a long period in the hands of the smugglers, who had substituted a forged one in its place. But the cordon of frontier guards is destined also to protect another branch of the revenue—the imperial monopolies. These consist chiefly of tobacco and salt.

Tobacco is an article indispensable to the comfort of a German or Sclavonian, is monopolized by the government in all the provinces except Hungary. There are several manufactories against which might be urged the same objection that we started when speaking of the industry of the empire, for they are conducted by agents on account of the government, naturally at a much greater expense than could be done by individuals working on their own account. Even in so trifling a matter as the preparation of this plant for smoking, the cautious spirit of the government is discernible; for, in order to secure a constant supply of the usual qualities, tobacco of a superior flavour is never sold; but an equalizing mixture is applied, which reduces the best to the ordinary level, and the public is never allowed to enjoy a superior article, lest an unfavourable season should reduce the quality of the stock and cause dissatisfaction. As the consumption is immense, and that which is bought raw is sold at 2s. per lb. the sum it brings to the treasury must be large.

The wealth of the Austrian states in salt is every where betrayed by the names of countries and towns; Salzburg, Gallicia, Hall, Hallstadt, [illegible], are all named from salt.

Some years back the entire production of mineral salt was calculated at 3,188,081 cwt., of boiled salt 2,117,370 cwt., of sea salt 550,000 cwt., consequently together 5,885,451 cwt., the greater part of which was consumed in the country, part exported, and part applied to salting sea fish.

The salt mines and pans are managed, like the tobacco manufactories, by civilians, for the profit of government, and, like the former, must be costly. But these and the other mines in different provinces occupy a great number of hands, and [illegible], as we have already seen, has also its [illegible]. The mines of Hungary alone occupy 3,300 hands. The following table gives an idea of the importance of mining speculations in Austria, but much of the produce here reckoned is on private account.

	Quantity gained per Ann.	Price per cwt. in Florins.	Value in Florins.
	cwt.		
Gold	23 9-10ths	72,600	1,749,222
Silver............	462 17-20ths	4,800	2,318,252
Copper	54,765	48	2,629,386
Tin..............	5,500	100	550,000
Lead	76,506	12	918,172
Iron	1,688,458	4	6,753,832
Quicksilver......	5,240	167	875,080
Cinnabar	7,800	150	1,170,000
Cobalt	9,405	18½	174,178
Antimony	6,900	12	82,000
Bismuth	700	36	28,200
Manganese......	850	10	8,500
Arsenic	226	75	50,625
Mineral green ..	1250	55	68,475
Salt	5,928,189	3	17,784,507
Vitriol	10,120	12	121 440
Alum	8,104	15	121,560
Coals	1,177,000	¼	292,334
Other minerals...	.....	.....	8,010,760
			Florins 43,859,353

The produce of the gold mines of Transylvania is reckoned at from 2000 to 2500 marks, and occasionally 3400 mks. (100 m. = ½ cwt.) Those of Hungary are stated to yield 2000 mks. or 10 cwt. The Austrian provinces (Salzburg) yield 60—90 mks. Hungary and Transylvania produce about 92,000 marks or 460 cwt. of silver; Bohemia 8,870 mks.; Styria, Carinthia, and Gallicia 2000 marks. Rich as this gain may appear, it gives in reality but a faint idea of the inexhaustible wealth of the different mountain chains which traverse the Austrian empire, the mines in which would suffice to supply all Europe if their management were left to the exertions of private individuals. The wretched state of the roads in the most productive mining countries of Hungary and Illyria, and the neglected condition of the rivers, which ought to afford every facility for inland transport, not only render it scarcely worth while to work many of the less valuable metals, but subject these districts occasionally to all the inconveniences of scarcity, while other parts of the same province are literally oppressed with the abundance of the crops.

The crown lands are another and very extensive source of revenue; but we are as little able to state the income they produce, as to give the amount which any one of the taxes annually yields. A mere allusion, however, to these domains suggests a very important question connected with the year 1811, that terrible epoch for the nation, which shook the public credit to its foundation. The measure of depreciating the current coin to one-fifth of its value by an order of council, which threw the trading and industrial classes into indescribable misery, while the landed proprietors remained untouched, was one of those wanton, inconsiderate acts of oppression, which may be explained, but cannot be palliated by supposing the most complete ignorance of all the principles of political economy on the part of those who originated, as well as those who suffered, such a measure. The utmost that could be gained by such a step was the relieving the government from a part of the public debt, and the defrauding the contractors, with whom at the moment negociations were pending. The debt could not at that moment have been a subject of such inextricable difficulty, while the latter gain must at all times have been far too paltry, independently of the moral effects of the measure, for any government to look upon it as an advantage worth obtaining by such means. So great was the panic occasioned by this step, that in a few days the new issue of bank notes sank twenty-five per cent. in value for circulation, and, as all persons engaged in purchases, and all debtors, seized the opportunity in order to defraud the parties to whom they were indebted, the misery entailed upon thousands of families, which the mere loss reduced to ruin, was aggravated by the circumstance of the gain in such cases being on the side of the improvident, while the careful economist was despoiled of his frugal hoards. If the total gain accruing to the government by this step were revealed, there is no doubt that we should find that it might have been covered by the sale or mortgage of part or the whole of those crown lands, whose existence in the possession of the crown, after the nation had been called upon to make so cruel a sacrifice, loudly accuses the rulers who would not give up this means of influence to secure the welfare of the people.

This step may be said to have given the death-blow to Austrian credit at home, the people not yet having recovered confidence in the government —a fact which has shown itself on many occasions within the last three years, when the near prospect of a breach with France has invariably made the public papers unmarketable at Vienna; and the first declaration of war in Europe will be marked by a fall of from 30 to 40 per cent. in their nominal value. This does not proceed, however, from any want of confidence in the resources of the empire, the wealth of which is well known to its inhabitants, but from the measures and avowed opinions of the principal men at the head of public affairs. It is known that an establishment of the finances upon a sound footing has always been avoided, as rendering imperative a degree of responsibility which the ministers will not submit to, while the annual increase of the taxes and the raising of large loans after so long a continuance of peace show how badly the present system of taxation is working. Upwards of £40,000,000 has been raised since 1816 by way of loan, and some measure of the kind adopted annually shows that the revenues, large as they are acknowledged to be, do not suffice to cover the expenses of the state. A large proportion of this debt is stated to be in the hands of the commissioners of the sinking fund; and perhaps this is the fact, for the credit of Austria has been in so fluctuating a state since 1830, that the price of stocks has only been kept up by the interference of the government, and the occasional purchase of large sums when the market was depressed.*

AUTOMATON, (*a*.) We have spoken briefly in the body of the work of various automata, or pieces of mechanism made to resemble living creatures in appearance and to perform their actions, that have been exhibited, both in ancient and modern times, to the astonishment and delight of the world. A fuller description of one or two of these, from materials now before us, may interest the reader.

One of the most remarkable automatons ever contrived and executed, was the famous chess-player, which challenged and beat some of the best players of that game in every capital city of Europe. Of this most ingenious piece of mechanism many of our readers must have heard, though the explanation of the wonder may not be so familiar to them. The automaton chess-player was constructed by M. Kempelin, a Hungarian gentleman of education and genius, residing at Presburg, in which city it was first exhibited. It was afterwards brought by the inventor to Vienna and Paris, and in 1783-4, it was exhibited in London and other parts of Britain where it was visited and examined by many hundred thousand persons. It was subsequently carried over all Europe, and after M. Kempelin's death, was brought a second time to Britain in 1819, to be shown in public anew. During all this time, the secret of the automaton's movements was never publicly discovered, although it had been privately purchased, as we shall see, and though such was the interest excited by it among the learned and the ingenious, that several books were published on the subject.

The automaton, adorned with a splendid turban, and dressed in the rich costume of an Asiatic sultan, sat before a chess-board placed upon a sort of cupboard, three feet high, two feet broad, and four feet long, and moving on castors. The cylinders, levers, and springs necessary for the machine were in the cupboard; and before it was put in motion the inventor took care to open the doors of the cupboard alternately, and to point out that the quantity of clock-work with which it was filled made it impossible to introduce any person into it. As soon as an antagonist presented himself, the exhibitor took up his long iron key, and wound up the machinery with studied gravity, during which the clicking of the wheels was distinctly heard.

The eyes of the automaton were now directed to the board, and, after due meditation, he lifted up his arm, placed it over the piece that he intended to move, grasped it between his fingers, and then put it on the square where it was to remain. If a false move was made, he shook his head discontentedly, and replaced the piece. When the automaton gave check, his lips moved and uttered a hoarse sound resembling *shay*, which served as a notice to his adversary.

Thus nothing which could favour the illusion had been neglected; and though on reflection it appeared certain that the hand of the automaton was guided, the method of the communication remained a mystery. All eyes were turned to Kempelin, and endeavoured to draw from his physiognomy or gestures some hint of the means that he employed—but in vain. Sometimes he turned his back to the table, and sometimes went several steps from it, allowing three or four moves to be played before he returned: the table too might be moved at the will of the spectator, thus rendering all communication with the floor or the next room impossible. The examination which had been allowed of the interior showed that a child or a dwarf could not be concealed in it; besides, supposing that one had been there, how could he, at the bottom of a cupboard, almost hermetically sealed, see a game played on a board placed on the table above?

The mystery was long impenetrable. When at Berlin, Frederick the Great, in a moment of enthusiasm, paid a large sum for the machine and the secret. When the mystery was made known to him, its charm was over, and Frederick, unwilling to make public that he had been duped, ordered the automaton to be thrown into a lumber room in the palace, where it remained for nearly thirty years, buried and forgotten.

When Napoleon was at Berlin, the automaton was raised from his tomb, re-assumed his former splendour, and, proud of having triumphed over the conqueror of Austerlitz, continued his travels.

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* For the above article, which contains the most recent statistics of the Austrian empire, we are indebted to the Foreign Quarterly Review.

After some years he arrived at the Bavarian court, where the ecstasy which his play never failed to excite was again renewed. Indeed the impression made was so strong, that Prince Eugene could not resist the temptation of becoming the possessor of this masterpiece, and learning the secret which was at the bottom of so many prodigies; his desire was satisfied, and the price of his initiation was fixed at 30,000 francs (£1200).

The moment had arrived when the veil was to be removed, and he was to become acquainted with the invisible genius,—the superior being that hovered over the chess-board. All profane eyes had been banished, and the Prince was alone with the exhibitor. The latter, by way of explanation, opened both the doors of the machine at once;—the clock-work had disappeared, and a real flesh-and-blood chess-player was in its place. He was sitting on a low bench, upon castors, and seemed very ill at ease. We may suppose how the new purchaser was disenchanted on seeing this;—the solution of the problem depended merely on a juggling trick. The cylinder, levers, and clock-work, were very slightly made, and could be removed at pleasure. While the spectator was indulged with a view of the machinery, the doors being opened, not at once, but only in succession, the player concealed himself in the parts not exposed to view. One or two rehearsals served to teach a player this exercise, as well as the method of turning the handle that moves the automaton's arm, of touching the elastic spring that moves its fingers, and of pulling the cord belonging to the bellows that said *shay*. Hence it would appear that this part of the secret was pretty well guessed or known by the author of a pamphlet, entitled 'An Attempt to analyse the Automaton Chess-Player of M. De Kempelin.' London, 1821. 8vo. After describing the manner in which the player may take refuge in one part of the machine while another is exposed to the spectator, he says, 'When the doors in front have been closed, the exhibitor may occupy as much time as he finds necessary in apparently adjusting the machinery at the back, whilst the player is taking the position described in figs. 7 and 8. In this position he will find no difficulty in executing every movement required of the automaton: his head being above the table, he will see the chess-board through the waistcoat as easily as through a veil."

But the ingenious author of this pamphlet, though right in his supposition that the game is played by a person concealed in the machine, is wrong in imagining that he sees the moves of his antagonist. The method by which the player becomes acquainted with the moves made upon the board, shows a singular felicity of mechanical contrivance; but has not yet been made public.

Prince Eugene now found that keeping the automaton was useless, unless he also kept the player; and he therefore allowed the proprietor to carry off the wonder-working Turk, on conditionally paying interest for the sum which had been given for the secret.

A pleasant story is told of a panic that once seized the automaton. He had arrived at some town in Germany, where a celebrated conjuror was exhibiting his tricks. The automaton soon eclipsed the juggler; the latter, piqued at his success, went to see him, guessed the secret, and, seconded by an accomplice, began to roar out most lustily, "Fire! Fire!" The spectators ran here, there, and everywhere; the automaton in his fright, upset his antagonist, rolled about in the strangest way, and seemed to have gone mad. Fortunately, the proprietor preserved his presence of mind, and pushed him behind a curtain, where his fears were soon calmed. Thus the juggler was defeated, and the glory of his rival remained untarnished. The automaton has passed several years in North and South America.

Perfect as the chess-player is as a piece of mechanism, it may by many people be considered as inferior to the celebrated *duck* of Vaucanson. This ingenious person, who flourished in France during Louis XV.'s reign, constructed a duck, exactly of the natural size, and scarcely distinguishable from the living animal. It quacked as perfectly as if it had been hatched in a nest; it muddled the water which it lifted with its bill; it ate and drank, and performed all the gestures and movements peculiar to the living animal with wonderful accuracy. When grains of corn were cast before it, it stretched its neck to pick them up, swallowed them, and, what was still more marvellous, digested them by an artificial chemical process in its stomach, and finally discharged them from its bowels in a digested condition. What constituted an additional beauty of this piece of mechanism, was its internal anatomical structure, which in every bone, every cavity, every canal, resembled the real duck. The king and courtiers of France were so much delighted with it, that it was subsequently exhibited on the faith of that success over all Europe, and, as might be expected, the interest which it excited every where was most flattering to its constructor.

The same mechanist exhibited his astonishing powers in the construction of an automaton flute-player, which executed several very difficult pieces of music with great beauty and precision. Considering the influence which is exerted by the mobile character of the human lips and throat in modifying the tones of instrumental music, such a machine as a flute-player could not, it is evident, be constructed without great labour and ingenuity. The operations of this automaton were directed by clock-work, which acted on not less than nine pair of bellows. The air emitted from these by the contracting force of the clock-work, passed from the lips of the figure into the holes of a flute, held, as usual, in the hands. Seven levers directed the motions of the fingers, and regulated the ingress of the air into the flute. Various contrivances, of a delicate kind, modified and counteracted the hissing, &c., which such a machine was liable to. In short, every motion which a flute-player of flesh and blood goes through in the exercise of his art, found a parallel in this machine of M. Vaucanson, and the effect of the whole was surprising in the highest degree, and most honourable to the ingenuity of the mechanist.

In a late number of Galignani's Messenger, the following account is given of an automaton violin-player, made by a monsieur Mareppe, and exhibited before the Royal Conservatory of Paris.

"Our informant, M. Bruyere, who was present, thus describes it:—On entering the saloon, I saw a well-dressed handsome figure of a man, apparently between forty and fifty, standing with a violin in his hand, as if contemplating a piece of music which lay on a desk before him; and had I not gone to see an automaton, I should have believed the object before me to have been endowed with life and reason, so perfectly natural and easy were the attitudes and expression of countenance of the figure. I had but little time for observation before the orchestra was filled by musicians, and, on the leader taking his seat, the figure instantly raised itself erect, bowed with much elegance two or three times, and then, turning to the leader, nodded, as if to say he was ready, and placed his violin to his shoulder. At the given signal, he raised his bow, and, applying it to the instrument, produced, à la Paganini, one of the most thrilling and extraordinary flourishes I ever heard, in which scarcely a semi-tone within the compass of the instrument was omitted, and this executed with a degree of rapidity and clearness perfectly astonishing. The orchestra then played a short symphony, in which the automaton occasionally joined in beautiful style; he then played a most beautiful fantasia in E natural, with accompaniments, including a movement allegro mollo on the fourth string solo, which was perfectly indescribable. The tones produced were like any thing but a violin, and expressive beyond conception. I felt as if lifted from my seat, and burst into tears, in which predicament I saw most persons in the room. Suddenly he struck into a cadenza, in which the harmonics double and single, arpeggios on the four strings, and saltos for which Paganini was so justly celebrated, were introduced with the greatest effect; and after a close shake of eight bars' duration, commenced the coda, a prestissimo movement played in three parts throughout. This part of the performance was perfectly magical. I have heard the great Italian, I have heard the still greater Norwegian, I have heard the best of music, but I never heard such sounds as then saluted my ear. It commenced *p p*, rising by a gradual crescendo to a pitch beyond belief; and then by a gradual motendo and colendo died away, leaving the audience absolutely enchanted. Monsieur Marreppe, who is a player of no mean order, then came forward amidst the most deafening acclamations, and stated, that, emulated by the example of Vaucanson's flute-player, he had conceived the project of constructing this figure, which had cost him many years of study and labour before he could bring it to completion. He then showed to the company the interior of the figure, which was completely filled with small cranks, by which the motions are given to the several parts of the automaton at the will of the conductor, who has the whole machine so perfectly under control, that Monsieur Marreppe proposes that the automaton shall perform any piece of music which may be laid before him within a fortnight. He also showed, that, to a certain extent, the figure was self-acting, as, on winding up a string, several of the most beautiful airs were played, among which were 'Nel cor piu,' 'Partant pour la Syrie,' 'Weber's last waltz,' and 'La ci darem la mano,' all with brilliant embellishments. But the *chef d'œuvre* is the manner in which the figure is made to obey the direction of the conductor, whereby it is endowed with a sort of semi-reason."

AYLESBURY; a market-town and parish in the county of Buckingham, the former distant from London thirty-eight miles north-west. The town stands in the rich tract of land called the vale of Aylesbury, which extends from Thame in Oxfordshire to Leighton in Bedfordshire. The houses are chiefly built of brick, the streets are irregular but well paved, and lighted with oil, and the supply of water is good. The county-hall is a handsome brick edifice, erected in 1723, in which the quarter-sessions and Lent assizes are held. The market-house is a modern building, constructed on the model of the Temple of the Winds, at Athens. The principal manufacture is that of lace, and many of the inhabitants are supported by breeding young ducks for the London market, which they contrive to bring forward in the middle of winter, when they are rare, and bear a very high price. A market for corn and provisions, held on Saturday, is well attended. The parish is a prebend of the same name in the cathedral church of Lincoln; the living is a discharged vicarage in the archdeaconry of Buckingham and diocese of Lincoln, valued in the king's books at £24 18s. 1d., and in the patronage of the prebendary of Aylesbury. The church, dedicated to St Mary, is an ancient and interesting structure in the form of a cross, with a low tower rising from the intersection of the nave and transept, which, owing to the elevated situation of the tower, is seen for many miles round. The Methodists, Baptists, Independents, and Society of Friends, have places of worship here. There is a free grammar school here, which was founded and endowed with £8 per annum, by Sir Henry Lee. The endowment was subsequently augmented by a donation of £5000, bequeathed by Henry Phillips, Esq.. a native of the town; which has been invested in land producing £2[illegible]7 16s. 7d. per annum; there are one hundred and twenty boys on the foundation, fifteen of whom receive instructions in the classics. In 1718, the school-house, and residences for three masters were erected. There is a Lancasterian school, which was founded by Mr John Hull, of Uxbridge; besides which there are several Sunday schools in connexion with the different congregations. A rental of upwards of £300 per annum is yielded by lands given in 1694 by Mr John Bedford, for the support of the poor and repair of the highways. The minor charities are numerous, and by attracting strangers have tended to increase the population. The family of Brudenell Bruce takes the title of marquess from Aylesbury. There were here anciently a nunnery, and two hospitals for lepers, dedicated to St John and St Leonard, which had gone into decay previously to the year [illegible]. Population of town and parish in 1831, [illegible].

AYLSHAM; a market-town and parish in the county of Norfolk, the former distant from London 118 miles north-east; from Norwich, 12. The town stands on the southern bank of the river Bure, which has been rendered navigable for craft of fourteen tons from hence to Yarmouth. The living is a rectory in the archdeaconry and diocese of Norwich, valued in the king's books at £17 [illegible], and in the patronage of the dean and chapter of Norwich. The church, dedicated to St Michael, is a spacious structure in the decorated style of English architecture, consisting of a nave, two aisles, two transepts, a square tower, and a small spire. It contains a curious and richly sculptured font, and some curious ancient ornaments, with a modern one to Humphrey Reptoun, a writer on gardening and architecture who resided in this town. The church was erected in the 14th century by John of Gaunt, duke of Lancaster, the court of whose duchy was held in this town, the land of which and of the parish is chiefly held by copyhold from the same duchy at this day. This was formerly an important manufacturing town. During the reigns of Edward II. and III. it was celebrated for the manufacture of linen, which was sold under the name of Aylsham web. Subsequently the manufacture of woollen articles gave employment to many of the inhabitants, but since the introduction of machinery, this branch of trade has also fallen into decay. Corn and timber now form the principal articles of trade. There is a free school, originally founded in 1517 by Robert James, mayor of Norwich, and endowed with £10 per annum, which has been recently incorporated with the national school. A fellowship in Corpus Christi college, Cambridge, founded by Archbishop Parker, is restricted to a scholar educated in Aylsham. The Baptists and Methodists have places of worship here. In the neighbourhood there is a spa, the water of which has been found useful in chronic disorders. The principal seat in the neighbourhood is Blickling House, originally built by Sir John Hobart in 1628, and said to have been the birth-place of Anne Boleyn. Population in 1831, 2334.

B

BACON, Sir Nicholas, the father of the illustrious Lord Bacon, was born at Chislehurst, in Kent, in 1510, and educated at Cambridge. He applied himself to the study of the law, in which he greatly distinguished himself, and was promoted by king Henry VIII. to the office of attorney in the court of wards, in which office he was continued by king Edward VI., and in 1552 he was elected treasurer of Gray's Inn. He was knighted by Queen Elizabeth, and in 1558 he was made lord keeper of the great seal. This important situation he held for twenty years, discharging its duties as an able statesman, profound lawyer, and faithful counsellor. He died on the 26th February, 1578–9, equally lamented by the queen and her subjects. It is narrated that when the queen told him that his house at Redgrave was too little for him, he modestly answered, "No, Madam; but your majesty has made me too great for my house." He was the first lord keeper who ranked as lord chancellor.

BAGDAD (*a.*) The city of Bagdad, in Asiatic Turkey, is unhappily subject to visitations of the plague, but that which afflicted it in 1831 was the most severe on record. About the middle of March in that year, it first made its appearance. The population then somewhat exceeded 80,000. Of this number 7000 perished in the first fortnight; and as this presented a daily average of mortality equal to the *maximum* in plagues considered very bad, it was, not without reason, hoped that the rage of the pestilence would then subside. It had, however, scarcely commenced. At the termination of the period mentioned, carbuncles began to appear in the patients, and from that time the *daily* mortality increased with a rapidity truly frightful, until, towards the end of April, it attained the maximum, of little less than 5000; and at the termination of the calamity, it was computed that out of 70,000 persons, (which allows more than 10,000 to have perished from other causes, or to have escaped,) not less than 50,000 persons were destroyed by the plague in the two months of its duration. Although this can only be regarded as an approximation, the desolate state in which the city was left shews that the amount of mortality could not have been much less, but very probably more.

This extent of destruction, which, in proportion to the population, far exceeds that of any other plague of which authentic record remains, is not to be attributed to any peculiar virulence in the pestilential *miasma*, but rather to concurring circumstances, which, in the first instance, precluded the dispersion or escape of the people, and, in the second, obliged them to congregate densely in particular parts of the city. In ordinary circumstances, large numbers of the upper classes would have removed to Bussorah, Mosul, or Damascus, and other towns; and the poor would have dispersed themselves in the open country. But at this time the Arabs, scarcely at any time manageable, were emboldened by the knowledge that Ali Pasha of Aleppo was marching upon Bagdad with a firman from the sultan, empowering him to depose the ruling Pasha, and occupy his place. Various parties therefore fixed themselves in the vicinity of the town, for the express purpose of plundering those who might endeavour to escape from the plague; and, if these were avoided, others lay beyond, who had equally no fear of the Pasha before their eyes, and who, except from such fear, would think no more of plundering a man of all he possessed than, to use their own expression, of peeling an onion. This consideration prevented many from attempting to escape; and many who were hardy enough to make the attempt soon returned, deprived of all they had taken with them, even to the clothes they wore. Few of those who did succeed in getting to some distance from Bagdad without being plundered, had much cause to congratulate themselves on their good fortune. The rivers Euphrates and Tigris are flooded twice in each year; first, in the spring, from the melting of the snows in the mountains of Armenia; and then, in autumn, from the periodical rains. This year the plague had begun to assume its most terrible features, when the rivers overflowed their banks in a manner without recorded or traditional example, laying the country, in the lower part of their course, completely under water. Many of those who were then on their way to other places were drowned; a few found the means of returning to Bagdad; and many who saw the waters gathering around them, and equally precluding their progress and return, were enabled to retreat to some rising grounds, where they established themselves, and waited many weeks till the subsiding waters allowed them to return.

At Bagdad the waters were for some time excluded by the walls of the town; but, on the night of the 26th of April, a part of the wall on the north-west side of the city was undermined and fell. The waters then rushed in, and overthrew in their career about 7000 houses, burying in the ruins nearly 15,000 persons, many of whom were sick or dying of the plague, besides a large number of unburied dead. Those who escaped from the immediate consequences of this fearful irruption, withdrew to such parts of the city as remained entire or less ruined, where they were received into the houses of their friends, or congregated, sometimes to the number of thirty, in the houses which the owners had forsaken, or which the plague had desolated; and from the daily fall or partial ruin of single houses subsequently, the population was undergoing such a continual process of condensation, until the subsidence of the waters, as completely excluded the city from the benefit which, under ordinary circumstances, would have resulted from the reduced numbers of the population. The inundation is, therefore, to be regarded as the proximate cause of that unexampled amount of destruction which the plague effected. It also resulted from this condensation of the population, and from the deprivation of the usual resources for the disposal of the dead, that the sickening horrors of a plague were accumulated tenfold before the eyes of the survivors. Burial-places in the East are generally without the town. These were, at Bagdad, laid under water, and while the disposition and power lasted to bury the dead at all, every open space—the streets, the yards of mosques and stables, were turned up to furnish graves. In a stable-yard, which the terrace of one house overlooked, nearly a hundred graves were opened and filled in the course of one day and a half. It was a fearful thing to see the uncoffined dead brought in barrows, and on the backs of asses, and laid upon the ground till the graves were ready for them.

At this early period of the plague, the usual custom was generally observed of enfolding the bodies in cotton, like mummies; but when cotton was becoming scarce and dear, the richest natives, in order to secure for themselves some of the honours of the grave, went in person to purchase their own winding-sheets of the only man who then, at his own house, sold the cotton, and who on this occasion made immense profits which he did not live to enjoy. But with the increase of mortality, both the power and inclination to inter the dead diminished. If the means of removal had existed, they would, without doubt, have forsaken their houses, leaving the accumulated dead unburied in them; but this being precluded, the dead bodies were put out into the streets, where they were greedily devoured by the lean and ravenous dogs which swarm in the cities of the East. He did much, then, who took the dead of his household to the river and threw them in.

BAILLIE, Evan, Esq., formerly M. P. for Bristol, was a native of Inverness-shire. He was one of the most eminent of the merchants of Bristol; and was chosen member, without a contest, at the general election of 1802, re-elected in 1806 and 1807, and retired in 1812. After devoting his energies during a long series of years to the affairs of the extensive West India establishment of which he was the founder, and to the service of his fellow-citizens, upon principles of integrity and independence, he exchanged the turmoil of civic life for the retirement of his native country, where he passed the evening of his days. He died at Dochfour near Inverness, June 28, 1835, aged ninety-three.

His son, the present James Evan Baillie, Esq., has also represented Bristol in three parliaments, having been first chosen in 1830.

BAIROUT, anciently Berytus, a seaport of Syria, situated in long. 35° 32′ E. lat. 33° 45′ N. The harbour is now choked up with sand and rubbish, but there still remains a pier to which boats can approach sufficiently for discharging goods. Large vessels anchor at a distance in the roadstead. The town itself is an irregular square, open to the sea, and towards the land surrounded by a wall, with a few round towers of little strength. It contains three mosques and four Christian churches. The dwelling-houses are spacious, and the bazars amply furnished with merchandise. The commerce of Bairout exceeds that of any other port in Syria. It is the maritime emporium of Damascus and of the surrounding country. British manufactures are imported to a considerable extent, and in return, cotton, corn, raw silk, wine and oil received. The ancient Berytus contained a public school of jurisprudence which long enjoyed a high degree of reputation. But the town suffered severely from successive shocks of earthquake, until, in 554, it was totally destroyed. After a long interval, the modern town was founded near the ancient site, and was possessed by the emirs as their capital and only sea-port until they were expelled by Djezzar, pasha of Acre. The population of the place is now estimated at about 7000.

BAKEWELL; a parish and market-town in the county of Derby. The parish includes the chapelries of Ashford, Baslow, Beeley, Buxton, Chelmerton, Great Longstone with Holme, Mony-Ash, Sheldon, and Taddington with Priestcliffe, the townships of Bakewell, Blackwell, Brushfield, Bubnell, Flagg, Froggatt, Harthill, Overhaddon, Rowland, Great Rowsley, and part of Aport, and part of Wardlow, and the hamlets of Calver, Curbar, Hassop, and Little Longstone. It is upwards of twenty miles in length, and eight in breadth. The living is a discharged vicarage, a peculiar of Lichfield, valued in the king's books at £40, and in the patronage of the dean and chapter of Lichfield. The church, dedicated to All Saints, is an ancient and spacious cruciform structure, partly in the Norman and partly in the early English style of architecture, having at the western entrance a highly ornamented Norman arch, and an octagonal tower, with a lofty spire, springing from the intersection. Within is a stone font of great antiquity and several altar tombs of alabaster supporting recumbent figures. In the churchyard stands an ancient cross, decorated with rude sculpture, but much mutilated. There are mines of coal, lead, and zinc, and quarries of stone and marble, which give employment to many of the inhabitants. The town is situated on the river Wye near its confluence with the Derwent. It stands in a beautiful and picturesque vale between Matlock and Buxton, the air of which is remarkably salubrious, and has an ample supply of water from numerous springs. The name is derived from the Saxon *Baderanoylla*, or *Badde cum Well*, of which it is a contraction and corruption. The original name was derived from the circumstance of there being

Still, as the finer feelings in an enlightened nation are spread through a wider circle of its population, and many things are for them oppressive of which a less cultivated people would scarcely be sensible, there can be no doubt that the invincible hostility they bear to their present rulers is not without foundation. The repressing character of the Austrian sway, under which mediocrity makes the greatest progress, while talent and energy are looked upon as two disturbers of the public peace which cannot be subjected to sufficient control, is little suited to the tastes of an ardent people, among whom democratic ideas have descended as a legacy from the flourishing days of their state. Many concessions have been made by the Austrians, in order to conciliate the inhabitants, especially of the cities, where the direct taxes upon industry are much lower than in the provinces northward of the Alps; but the same system of innumerable bureaux, and the same destructive institutions of monopoly, weary out the aspiring spirit, and cramp the nerves of enterprize. Yet the Italian provinces must be reckoned among those whose subordination depends upon the presence of an imposing military force; and, to the skill with which the government subdues the discontented of one province by the power it borrows from another not much less dissatisfied, it is indebted for the effective subjection in which all are retained. But an armed force, of even more approved reliance than Austria could muster, would never have succeeded so completely in establishing the power of the government in a manner which renders all thoughts of resistance so hopeless that they are abandoned on all sides. Much subtler, though, as it would appear, more oppressive, checks on the ebullitions of popular spirit have been forged, the tendency of which is at the present to tame the refractory by presenting innumerable obstacles to every attempt at innovation, and eventually to destroy all dangerous energies so timely, by means of early training, that the task of governing shall be rendered easy, and restraint robbed of its bitterness.

The undisputed sovereignty of the emperor in every province is the first demand upon the subject, and, as the royal person is multiplied in each by thousands of representatives, the duty of submission and respect is one of those most frequently called into practice. It is part of the plan of government, in every German state, to employ one half of the nation to govern the other; and the paternal care of the sovereign is studious to prevent the number of *employés*, who live at the expense, and, as they doubtless imagine, for the benefit of their fellow-subjects, from being diminished. The Austrian state *Schematismus* presents a list of upwards of 25,000 individuals bearing appointments in civil offices, and the number of those whose appointments are either of too low a rank, or of so secret a nature, to be introduced in company with the first men of the country, may amount to many more. Let us imagine these civil officers, dependent solely on the crown, dispersed through an empire which contains so many jarring elements, and which unfortunately seems to be a matter *primo* [illegible] decided, that much loyalty cannot be expected;—let us follow each of these gentlemen as he enters into society, anticipating defection in all walks of life, and necessarily disposed to vindicate the authority that lends him consequence;—let us add to these the number of 13,000 officers and non-commissioned officers of the staff and commissariat department, all of whom are likewise to be found within the empire, at the head of an army, which on the peace establishment amounts to 270,000 men, and we shall see that the government has monopolized, by means of these individuals and their families, a powerful number of defenders in every social circle. When we add that the secrecy observed in all transactions,—especially, however, in the administration of justice,—screens every individual from the share of responsibility which every public officer ought to incur towards the public, some idea may be formed of the fearful power thus created, and of the abuses to which it must be subject. If we conclude these officials, civil and military, to require a rather superior degree of education to enable them to fulfil their respective functions, it must be evident that an immense mass of talent is abstracted from the middle classes of the nation, which, in the pursuit of science, agriculture, commerce, or the fine arts, could not be otherwise than productive of the greatest benefits. The nature of their employments in the *bureaux* is no where of a tendency to encourage a serious cultivation of any of the above-mentioned useful sciences in the *employés;* while on the public they may be said to operate in a directly prejudicial manner, as no individual can take a step of the slightest importance in life or business, without requiring the sanction of some of these government officers, and finding no small difficulty in procuring permission to become an industrious member of society.

This leads to another grand source of influence to the government,—the system of monoply in trade. A fact that the history of the last fifty years has sufficiently proved, is that popular tumults seldom originate amongst the peasantry of a country, and that the great problem of internal police is to keep the inhabitants of the towns satisfied and tranquil. To this end every city in Austria, beginning with the metropolis, is allowed to grant the freedom of trade to only a limited number of individuals, so that the mere fact of an apprentice having served his time by no means warrants his setting up in business. Strangers, who come into a city, must either show that they are provided with means of support, or that they can procure employment, otherwise they are at once expelled. In return for this privilege of exemption from much competition, the merchant, tradesman, &c., pays a tax of no trifling amount, bearing the candid designation of earnings-tax. In this manner the whole industrial class in Austria, being in some measure dependent on the government, which naturally has it in its power to introduce a system of competition at will, and not dissatisfied with a state of things which assures to it a certain competence apparently on easy terms, is gained for the present system. It does not seem that any exact compact exists between the trading classes and the state as to the number of privileged individuals in every branch; the butchers, however, form an exception, their number being fixed. This immunity is purchased by an extra tax called the slaughtering tax. Merchants and bankers are kept from increasing in number by its being necessary to show a certain amount of capital as a qualification for the permission to enter into trade. Whatever inconveniences arise from such a municipal system, and that they are not few in number will easily be supposed, are thought to be fully compensated for by the tranquillity which is stated to reign through-worshippers; it was made by one of them who happened to raise his torch near the ceiling of his cell, where the gas rises in consequence of its levity. It exploded, a large portion of the building was thrown to the ground, and several persons were severely wounded. Since that time they have been very cautious about lifting up a light in their cells, and they ran away terribly alarmed at seeing the Russian traveller do so. But they are very willing to perform the experiment at any time for the amusement of strangers, at some distance from their dwellings. The place they choose for this object is the well whence they get water. They usually keep this well open, to allow the gas to escape; but when they cover it, a sufficient quantity is evolved in half an hour to produce an explosive mixture with the air that was previously in it. When this is effected, a person takes off the cover of the well and throws into it a handful of lighted straw. The explosion which follows is said to be terrific, which may be easily imagined, the well being 100 feet deep.

Many theories have been formed to account for the vast development of gas at Baku: the most probable seems to be, that the naphtha which abounds in and beneath the soil is decomposed by some internal fire. That there is such a fire at no great distance from the surface, there can be no question. There are a great many hot springs, and in some crevices of the calcareous rock near the perpetual fire the heat felt is so great that it is impossible to keep the hand there. The whole territory, as well as some of the islands in the neighbourhood, are constantly subject to mud volcanoes. On one of those islands, named Svinoi Ostrov (Isle of Pigs), Mr Vatsenko, Russian consul at the court of Persia, was wrecked in 1826. The island, he says, is quite covered with volcanoes of mud; they are little heaps or swellings in the tenacious soil, which rise gradually with a peculiar noise to the height of two or three feet; they then burst like bubbles, water is thrown out, and their sides fall in. Outside they look like moist clay, and inside they have the appearance of burnt bricks: naphtha begins to flow out of the opening as soon as the water has ceased spouting. When one heap has disappeared, another rises near it, but not in the same place, and in this manner the whole island is covered; it has the appearance of an immense field grubbed up by pigs, which has induced the Russians to give it the name it bears. The whole of the surface is soft, and imbibes water like a sponge; after a shower of rain, it is a complete marsh, which will not bear a foot upon it.

The volcanoes of the continent are much larger, and more worthy the name than those little elevations on Svinoi Ostrov. They have been frequently described, and Kœmpfer has given a strange drawing of one in his "Amœnitates Exoticæ." They have occasionally thrown out large stones and flame as well as water, which may account for Massudi's description.

The chief riches of the country consist in its naphtha. This useful bituminous oil is of two sorts, black and white. The latter is the most valuable, and it is also much rarer than the other; it is found only at one place, about a mile from the village of Sarakhan, where it is gathered in sixteen wells or pits. Of the black sort the number of wells worked in 1833 was 109. Notwithstanding its name, this is by no means all black: it varies in quality from a coarse pitchy substance, which can be used for little better than caulking ships, to a clear greenish oil, which serves admirably for lamps. The earth and sand in the neighbourhood of the wells is so thoroughly impregnated with naphtha, that it forms an excellent fuel, and is used exactly like our coal: when it is found in large slabs, it is used like slates or tiles for roofing houses, for which purpose it is admirably fitted by its toughness and impermeability.

The naphtha is drawn from the wells, which vary from one to fifteen fathoms in depth, by means of buckets and windlasses, which are moved by men or horses. It is almost invariably found mingled with water, from which it is separated by being thrown into large ditches constructed near the wells, in which it is allowed to stand until the water by its superior gravity falls to the bottom. The naphtha is then gathered up in flat wooden scoops, and poured into large sheepskin bottles, which are then deposited in cellars well lined with cement, until they are wanted for exportation or home consumption. The production of black naphtha is computed to be about nine millions of pounds per annum, while that of the white sort is under thirty thousand pounds.

BALLINA; a seaport of Ireland, in the county of Mayo, and province of Connaught, situated on the river Moy, 125 miles W. N. W. from Dublin. The river runs through the town, and here separates the counties of Sligo and Mayo. The part of the town on the Sligo, or right bank of the river, is called Ardnaree, but is generally included under Ballina. In point of trade and population, it is the third town in Mayo. Value of exports in 1835, £70,568; of imports, £13,532. Population 5510. In 1798, General Humbert, who landed with the French troops in Ireland, took possession of the place.

BALLYMENA; a town of Ireland, the second in the county of Antrim in point of population and trade, is situated on the small river Braid, which unites with the Maine water two miles below the town; distant 24¾ miles N. W. from Belfast and 105 N. from Dublin. The linen trade is carried on extensively here; brown linen sales alone averaging £70,000 annually. In the vicinity of the town are a variety of bleach-greens, at each of which, on an average, 15,000 pieces are annually bleached. At the weekly markets, much business is done in linen, corn, &c. The linen-market is on Saturday, and there are two weekly markets for grain, pork, and other provisions, great quantities of which are bought, chiefly for exportation. Numbers of horses, cattle, and pigs, are also disposed of on the market-days. Altogether, the place is thriving, and the houses are generally commodious and well-built. Population 4067.

BALLYSHANNON; a town of Ireland, in the county of Donegal, is situated at the mouth of the river Erne, distant from Dublin 102 miles N. W. The Erne, which is here crossed by a bridge of fourteen arches, divides the town into two parts, that on the south side being the suburbs and called the Purt. The town is within four miles of Lough Erne, which embraces an inland navigation of more than fifty miles. The commerce on the river Erne has been impeded by barriers of rock, and plans have been proposed for opening a communication with the Lough, either by a canal or a railroad, to avoid the rapids on the river. A distillery and a brewery are carried on here on a large scale; the salmon fishery is also extensive. The principal streets are very steep, and there is nothing remarkable in the public buildings. Population, 3775, of which 1390 are in the Purt or suburbs.

BALSA. "Balsa," which in Spanish nautical language means float or raft, is the name bestowed on a contrivance for landing passengers with safety through a heavy surf. It is chiefly employed on the coasts of South America, both East and West, and exhibits a remarkable instance of the ingenuity of the human mind in overcoming those obstacles which nature has raised to the prosecution of its pursuits. It is formed of two seal skins sewed up so as to form large bags from seven to nine feet in length; these, being covered with a bituminous substance so as to be perfectly air-tight, are inflated by flexible tubes and secured by ligatures; the pipe is of sufficient length to reach the mouth of the conductor of this frail bark, who is thus enabled occasionally to replenish the bladders with air, should any have escaped. The two are securely fastened together at one end, which forms the prow of the vessel; the other ends are spread about four feet apart by a small plank, and the raft completed with small sticks covered over with matting. The manager of the balsa sits well forward, with his passengers or goods close behind him, and armed with a double-bladed paddle approaches the back of the surf, waiting for the highest wave, and contrives to keep his balsa on the top of it with her bow towards the shore till she is thrown up on the beach to the very extent that the surf reaches, and the man immediately jumps off to secure his balsa from returning with the sea, when the passengers land without wetting the soles of their shoes. The balsa will easily carry three passengers besides the person who guides it, and is employed in landing the cargoes from merchant vessels where the violence of the surf, particularly on the shores of the Pacific, prevents the possibility of European boats passing through it without great danger. Along the coast of Peru, which is almost entirely devoid of harbours, it is the only vessel used for these purposes, and by such frail means large bags of dollars and doubloons, and bars of silver and gold, are shipped off, without the least apprehension of their safe conveyance. There is another balsa, more simple and more frail, used in crossing rivers, an account of which is thus given by Mr Temple in his entertaining "Travels in Peru:"—"Take a dried bullock's hide, pinch up each of the four corners, put a stitch with a thorn to keep those corners together, and your boat is made. For use, place it upon the water bottom downwards, then put one foot immediately in the centre, and let the other follow with the most delicate caution; you are now to shrink downwards, contracting your body precisely in the manner in which, probably, in your childhood, you have *pressed a friar into a snuff-box*. When crouched down in the bottom, sundry articles are handed in and ingeniously deposited round you, until the balsa sinks to about an inch or an inch and a half; it is then considered sufficiently laden. A naked *peone*, (guide) now plunges into the stream, and, taking hold of one corner of the balsa, a peone on the shore imparts a gentle impulse to your tottering bark, while the person in the water, keeping hold of the corner with one hand, strikes out with the other, and swims away with you to the opposite bank."

BAMBROUGH, OR BAMBOROUGH, the name of a ward, parish, and village, in the county of Northumberland. The ward is about seventeen miles in length, and eight in breadth. The parish comprises the chapelries of Beadnell and Lucker, and the townships of Adderstone, Bambrough, Bambrough-Castle, Bradford, Budle, Burton, Elford, Fleetham, Glororum, Hoppen, Mouson, Newham, Newstead, Outchester, Ratchwood, Shoston, Spindlestone, North Sunderland, Swinhoe, Tuggal, Warenton, and Warnford. Population of parish in 1831, 3949. The village was anciently a royal borough and an important market-town, and in the twenty-third of Edward I. returned two members to parliament. It was originally called Bebbunbury, and gave name to an extensive district in the neighbourhood called Bambroughshire, possessed of certain privileges now obsolete. Population of village in 1831, 417.

BAMBROUGH or BAMBOROUGH-CASTLE; a township in the above parish. The name is derived from its vicinity to the celebrated castle of Bambrough, which stands on a high and rugged triangular rock of basalt, projecting into the sea, and accessible only from the south-east side. It rises 150 feet above the water-mark. It is said to have been erected about the middle of the sixth century, by Ida, the first Anglo-Saxon king of Northumberland. The following account of the castle is from Pennant's Scotland. "This castle and the manor belonging to it, was once the property of the Fosters; but, on the forfeiture of Thomas Foster, Esq., in 1715, for having joined the Pretender, it was purchased by his uncle Lord Crewe, bishop of Durham, and, with other considerable estates, left vested in trustees, to be applied to unconfined charitable uses. Three of these trustees are a majority; one of them makes the place his residence, and blesses the coast by his judicious and humane application of the prelate's generous bequest. He has repaired and rendered habitable the great Norman square tower; the part reserved for himself and his family is a large hall and a few smaller apartments; but the rest of the spacious edifice is allotted for purposes which make the heart to glow with joy when thought of. The upper part is an ample granary; from whence corn is dispensed to the poor without distinction, even in the dearest time, at the rate of 4s. a bushel; and the distressed for many miles around, often experience the conveniency of this benefaction. Other apartments are fitted up for the reception of shipwrecked sailors; and bedding is provided for thirty, should such a number happen to be cast on shore at the same time. A constant patrole is kept every stormy night along this tempestuous coast, for above eight miles, the length of the manor, by which means numbers of lives have been preserved. Many poor wretches are often found on the shore in a state of insensibility, but by timely relief, are soon brought to themselves. It often happens that ships strike on the rocks in such a manner as to be capable of relief, in case numbers of people could be suddenly assembled: for that purpose a cannon is fixed on the top of the tower, which is fired once, if the accident happens in such a quarter; twice, if in another; and three times if in such a place. By these signals the country people are directed to the spot they are to fly to, and by this means, frequently preserve not only the crew, but even the vessel; for machines of different kinds are always in readiness to heave ships out of their perilous situation. In a word, all the schemes of this trustee have a humane and useful tendency."

BANBRIDGE; a thriving little town in the county of Down, Ireland, situated on the river Bann, ten miles N. N. E. from Newry, and sixty miles N. from Dublin. It is only of late years that it has risen to commercial importance as the head of the principal district of the linen manufacture. The town is neat and well-arranged, and in consequence of regular employment in the various mills and bleaching greens around, the inhabitants are comfortable. The town-house, a handsome building, was built in 1831 by the Marquis of Downshire, the principal proprietor of the place. Population in 1831, 2469.

BANGALORE; a fortified town in Hindostan, founded by Hyder, and rendered by him a place of considerable commerce, chiefly in the export of betel, pepper, and sandal-wood. The gardens here of Hyder and Tippoo have been laid out with great care. They are divided into square plots, each of which, according to the Mussulman fashion, has some plant or flower allotted to it, with which it is exclusively filled. Owing to the height of the ground, European fruits and flowers may be reared. Bangalore was stormed by the British troops under Cornwallis, and abandoned to plunder. It is distant from Seringapatam seventy-four miles, and from Madras 215.

BANGKOK; the capital of the kingdom of Siam, is situated on the river Menam, twenty miles from the sea, in lat. 13° 40′ N., long. 101° 10′ E. The Menam flows into the Gulf of Siam, and there is a bar at its mouth where the highest water does not exceed fourteen feet: in other respects the river is navigable for vessels of heavy burthen. The city extends along the banks of the Menam about two and a half miles, and the river itself is peopled by numbers of floating houses or stores. The surrounding country is intersected with tributary streams and canals, so that almost all intercourse with Bangkok is by water. The commerce here is chiefly with China and the countries of the Malay archipelago. It consists in an interchange of all sorts of commodities. The population of Bangkok is estimated at 50 or 60,000 inhabitants, half of whom are Chinese settlers.

BANGOR, a town of Ireland, in the county of Down, situated on the southside of Carrickfergus bay, eleven and a half miles N. E. by E. from Belfast, and ninety-one and a half N. by E. from Dublin. The place seems to have been granted by James the First to Sir James Hamilton, who established a colony from Ayrshire here. The cotton manufacture is carried on to a considerable extent both in the town and neighbourhood; a little also is done in the linen trade and in the export of provisions. Population in 1831; of town, 2741; of parish of Bangor, including town, 9355. Close to the town is Bangor Castle, the seat of Viscount Bangor, the proprietor of the town.

BANKES, HENRY, Esq., of Kingston Hall, Dorsetshire; a trustee of the British Museum; was educated at Westminster, and Trinity College, Cambridge, where he graduated B.A. 1778; M.A. 1781. He entered parliament in 1780 as one of the representatives of the borough of Corfe Castle; and was for many years an active member, generally supporting Mr Pitt. He continued to sit in the house by virtue of his family borough, until, in 1826, he was elected for the county of Dorset. At the general election of the same year, he was re-chosen; but at that of 1830, after a severe struggle, he was defeated. Mr Bankes was an accomplished scholar, intimately acquainted with ancient and modern literature, and of a refined and acknowledged taste in the arts; accomplishments that enabled him peculiarly to grace his duties as one of the most active and zealous trustees of the British Museum, of which he was generally regarded as the organ and advocate in the House of Commons. His public life was marked by firmness in principle, a peculiar disinterestedness, and undeviating adherence to conscientiously formed opinions. He was the author of "The Civil and Constitutional History of Rome, from the Foundation to the Age of Augustus," published in 1818, in two volumes [illegible]

Mr Bankes married, in 1784, Frances, daughter of William Woodley, Esq., Governor of the Leeward Islands, by whom he had four sons and two daughters. He died Dec. 17, 1834.

BANNATYNE, SIR WILLIAM MACLEOD, one of the senators of the college of justice in Scotland, was descended from an ancient and honourable family, and born Jan. 26, 1743, O. S. Having enjoyed and profited by the advantage of a liberal education, he gave early indications of future eminence. He was admitted advocate Jan. 22, 17[illegible] and at the bar he deservedly acquired the character of a sound and able lawyer. He was the intimate friend and companion of Blair, Mackenzie, Cullen, Erskine, Abercromby, and Craig; and one of the contributors to the Mirror and Lounger. His accomplishments as a gentleman, and his attainments in general knowledge and belles lettres, were such as to excite an opinion that, had he devoted his talents exclusively to literary pursuits, he would have arrived at no ordinary degree of eminence. He was the last survivor of that phalanx of genius which shed so brilliant a lustre on the periodical literature of Scotland half a century ago. He was also one of the original founders and promoters of the Highland Society of Scotland, a national institution which has eminently and essentially contributed to the internal improvement of the country.

He was promoted to the bench on the death of Lord Swinton, and took his seat as Lord Bannatyne, May 16, 1799; and his judicial career for twenty-four years reflects high honour on his memory. He resigned in the year 1823, and was succeeded by the late Lord Eldin. His death took place at Whiteford-House in the county of Ayr, Nov. 30, 1833.

BANNISTER, JOHN, an eminent comedian, was the son of Charles Bannister, who was celebrated as a vocalist, actor, and wit, and was born in the year 1758. Early in life, he studied painting, with the wish to follow it as a profession, but he soon abandoned it for the stage, where he distinguished himself for many years in a variety of characters chiefly belonging to the comedy and tragedy of ordinary life. His acting combined much eccentricity, with exceeding jollity—and with the greatest humour he could blend the deepest pathos. "He was," says a critic, "the last actor who we remember enjoying a kind of personal feeling with his auditors without resorting to buffoonery. It has been said of some comic actor, that immediately on his *entrée* he shook hands with every spectator from the first seat in the pit to the last of the gallery. But Bannister created a different feeling; that sort of feeling that is created when a gentleman of approved worth comes into a circle of society. When he had to deliver a good sentiment, the spectators felt as if they knew it was the natural impulse of the mind; and they felt in all cases of emergency, not only for the character, but for honest Jack Bannister."

Charles Lamb, speaking of him and Suett, says, "Jack Bannister and he had the fortune to be more of personal favourites with the town than any other actors before or after. The difference, I take it, was this: Jack was more *beloved* for his sweet, good-natured, moral pretensions: Dicky was more *liked* for his sweet, good-natured, no pretensions at all. Your whole conscience stirred with Bannister's performance of *Walter*, in the 'Children in the Wood'—but Dicky seemed like a thing, as Shakespeare says of Love, 'too young to know what conscience is.'"

When Mr Kemble resigned the management in 1802-3, Mr Bannister succeeded to it; but he retained it for only one season.

On the 1st of June, 1815, having been long subject to periodical visitations of the gout, he determined to retire from the stage, on which occasion, after performing *Echo* (in "The World,") and the favourite part of *Walter*, in the Children in the Wood, he delivered the following address:—"Ladies and Gentlemen,—Seven and thirty years have elapsed since I appeared before you, my kind benefactors; and I feel this instant of separation is much more awful to me than the youthful moments when I first threw myself upon your indulgence. During my strenuous exertions to obtain your favour, how much have those exertions been stimulated and rewarded by the public! And one vanity of my heart, which it will ever be impossible for me to suppress, must be the constant recollection of the days in which you fostered me in my boyhood, encouraged me progressively on the stage, and, after a long and continued series of service, thus cheer me at the conclusion of my professional labours. Considerations of health warn me to retire;—your patronage has given me the means of retiring with comfort. What thanks can I sufficiently return for that comfort which you have enabled me to obtain?—This moment of quitting you nearly overcomes me—at a time when respect and gratitude call upon me to express my feelings with more eloquence than I could ever boast, those very feelings deprive me of half the humble powers I may possess upon ordinary occasions. Farewell, my kind, my dear benefactors."

Michael Kelly, in his *Reminiscences*, says that "no performer ever quitted the stage more deservedly respected or regretted."

A few years previous to Mr Bannister's retirement from the stage he gave an entertainment at Freemason's Hall, and afterwards throughout the provinces, with immense success, called "Bannister's Budget," the happy precursor of the many "At Homes," since so popular, from the lamented Mathews. He was also for some years the master of the Drury Lane Theatrical Fund, which he resigned in favour of Mr Kean.

In private life, he lived in the enjoyment of an extensive circle of friends of the highest character and respectability, by whom he was cherished and beloved; and until a very few months of his decease, excepting only the occasional visitations of the gout, enjoyed a green old age, and in the society of his friends "fought his battles o'er again" with a vigour and effect which never tired them or himself. He died on the 8th Nov. 1836, leaving a [illegible] family in good circumstances.

BANTAM; a town of Java, capital of a district of the same name, is situated in long. 106° 3′ E., lat. 6° 4′ S., near the mouth of a river which falls into the Bay of Bantam. It was once a flourishing place, but is now almost deserted, in consequence of its unhealthy situation, and the transference of the trade to Batavia. Before the Dutch conquest, the province of Bantam was an important state, its sovereign extending his sway over Borneo and Sumatra. The *Bay of Bantam* is gradually becoming inaccessible to vessels of any considerable burthen, from the daily accumulation of earth washed into it from the mountains, as well as from the growth of coral shoals.

BANTRY BAY; a bay on the north-west coast of Ireland, in the county of Cork, long. 9° 24′ to 9° 45′ E., lat. 51° 30′ to 51° 40′ N. It is in length about twenty-five miles and in breadth, including the islands which face it, from six to eight. Its depth of water is between ten and fourteen fathoms. It is surrounded by high mountains, and indented by creeks and inlets. The islands are Bear, Whiddy, Chapel, Horse, Hoy, and Rabbit, the four last being very small. Bear, lying near the western shore, forms the capacious and sheltered harbour of Bearhaven. Its length is about six miles, and its surface rocky. Whiddy lies near the northern extremity, and contains the forts erected for the protection of the Bay. It is about three miles in length, and from one to a quarter in breadth. Its surface is fertile, and it maintains about 450 inhabitants. The *town of Bantry* is situated at the head of the Bay, distant from Cork 47½ miles W. S. W.; from Dublin 173 S. W. The harbour is commodious, but, with the exception of the fishery and the export of corn and other provisions, little trade is carried on. Population, 4275.

BARCLAY, John, M. D., an eminent anatomist, was a native of Perthshire, where he was born in 1760. He first studied at St Andrews for the church, and was licensed as a preacher; but having repaired to Edinburgh in 1789, he gave his attention to the study of medicine, became assistant to Mr John Bell, and took the degree of doctor of physic in 1796. In the following year, he became lecturer on anatomy at Edinburgh, and until a short period before his death continued his courses of lectures every year with the most assiduous devotion to the instruction of his numerous pupils. In 1803, he attempted to reform the language of anatomy, by the publication of a Nomenclature, which, though not adopted by the profession, was generally acknowledged to display much talent and learning. In 1808, he published a Treatise on the Muscular Motions of the Human Body, and in 1812, his description of the arteries of the Human Body, both publications displaying much acute observation and research. His last publication was an Inquiry into the Opinions, ancient or modern, concerning Life and Organization. He died at Edinburgh in 1826. After his death, his introductory Lectures, containing a valuable abridgment of the History of Anatomy, were published.

BARKER, E. H.; an eminent classical scholar, was the son of a vicar of Beverley, in Yorkshire. He was educated at Trinity College, Cambridge, and early became acquainted with Dr Parr, with whom he was induced to reside for several years. He afterwards married, and settled at Thetford in Norfolk, where, for nearly twenty-five years, he devoted himself to classical literature. During that time he edited a new edition of Stephens's Thesaurus, with notes, and published a volume of Classical Recreations, besides several of the orations of Cicero: he also contributed many papers to the Classical Journal and the Museum Criticum. For the last few years of his life, he resided chiefly in London, employed in literary avocations. Besides the above works, he published an Inquiry into the Authorship of Junius's Letters, an edition of Anthon's Lempriere's Classical Dictionary, Noah Webster's English Dictionary, a translation of Julius Silig's Dictionary of the Artists of Antiquity, and two volumes of 'Parriana,' containing notices of Dr Parr and his contemporaries. His death took place in March, 1839. His disposition was amiable, his manners simple, and he enjoyed the friendship of many distinguished scholars of the day.

BARKING; the name of a parish and town in the county of Essex, the latter situated on the small river Roding, about two miles above its junction with the Thames, and seven miles E. N. E. from London. The inhabitants of the town are chiefly fishermen, or persons engaged in the conveyance of coal and timber from the Thames. They send vessels to the coasts of Scotland and Holland, and supply the London market. At Barking creek, which is navigable to Ilford, there is a convenient wharf which facilitates the operations of trade in a great degree. The inhabitants of the parish are chiefly employed in agriculture, and raise many vegetables, especially potatoes, for the London market. Much of the fertility of the soil is due to the large quantity of manure obtained from the Thames and the Roding; but the air is deemed unhealthy, and intermitting fevers are not unfrequent. A market is held on Saturday, and fairs are held on September 14th for toys, and October 22d for horses. Population in 1831; of the parish, 8036; of the town, 3404.

BARNARD-CASTLE; a market-town and chapelry in the county of Durham, 244 miles N. N. W. from London, and 26 S. W. from Durham. It is situated on the southern acclivity of an eminence, rising with a steep ascent from the river Tees; and owes its origin to Bernard Baliol, great-grandfather to John Baliol, king of Scotland, who erected a formidable castle, on the summit of a rock, on the west side of the town. The ruins of this fortress, including a round tower of great magnitude, are still to be seen; the walls enclose a very considerable area, of an irregular figure, and are mantled with ivy. Richard, duke of Gloucester, afterwards king of England, resided here for some time, and is said to have added considerably to its extent. In the reign of Elizabeth, it belonged to the earl of Westmoreland; and during his rebellion, it was seized and garrisoned for the queen by Sir George Bowes, Streatham. It now came into the hands of the crown, and was subsequently purchased, along with the houses, parish-lands and privileges, by an ancestor of the marquis of Cleveland, to whom they at present belong. The remains are interesting, and cover a space of more than seven acres of land. A delightful view of the Tees, over which is a bridge of two arches (erected in 1596), presents itself from the castle. The principal street of the town is spacious, and nearly a mile in length; the houses, mostly built of white stone, have a neat appearance, and some of them are handsome. The manufacture of carpets, which has progressively increased to a prosperous extent, is the principal one here; but there are water mills upon the Tees for the spinning of thread. The chapel, dedicated to St Mary, is not remarkable for any thing but its antiquity; it is a spacious cruciform edifice, with a square embattled tower rising from the centre: the living, a perpetual curacy, is in the gift of the vicar of Gainford. The other places of worship are for Wesleyan and Primitive Methodists, and Independents. A mechanics' institute (with library attached), a savings' bank, and a book society, flourish in this town. Raby Castle, and Rokeby Hall are seats of distinction in this neighbourhood. The market day is Wednesday. Population in 1831, 4430.

BARNSLEY or BLACK BARNSLEY (supposed a corruption of Bleak Barnsley); a market-town and chapelry in the west riding of the county of York, is situated on the side of a hill, distant from York twenty-nine miles S. W., from London 171 N. N. W. The inhabitants were formerly much employed in wire-drawing; and, though this branch of trade has fallen into decay, they are still considered to supply the best wire for the manufacture of needles. There are two extensive iron-founderies and a glass-work. The spinning of yarn employs many people, as does also the weaving of linen, which once employed several thousand looms, but is now beginning to relax. Coal is found in abundance in the neighbourhood, as also freestone and grindstone. The trade of the place has been greatly increased in consequence of the extension of the canal navigation, which connects the town with Wakefield. There is a large market every Wednesday for cattle and corn. There is a free grammar school here, founded and endowed in 1665, by Mr Thomas Keresforth. There is also a national school which is supported by subscription. In 1711, a parcel of land was bequeathed by George Ellis, the produce of which is applied to the education of twenty boys and girls, and to the apprenticing of a few of them. Barnsley also possesses a subscription library established in [illegible], and a philosophical society established in [illegible]. At the distance of about a mile from the town are the remains of the Cluniac priory of Monk Bretton, founded in the 3d of Henry II., by Adam Fitz-Swain. Population in 1831, 10,330. In 1811, it was 5,464, and in 1821, 8,284.

BARNSTAPLE; a sea-port town in the county of Devon, distant from London 193 miles W by S. It is situated on the eastern bank of the river Taw, over which there is a fine stone bridge of sixteen arches, in a broad and fertile valley bounded by a semi-circular range of hills. The streets are well paved and regular; the houses are built for the most part of stone, many of which are very handsome, and the supply of water is good. The river here expands into a fine bay, along the margin of which there is a delightful walk, at the end of which stands a statue of Queen Anne. There are here assembly and billiard rooms, and a theatre. The import trade of the place consists chiefly of wood from North America and the Baltic, lime from Wales, and in the coasting traffic with the various ports in the Bristol channel. The export trade consists in corn, oak, timber, and bark. The quay near which stands the custom-house, is commodious and extensive, but is not accessible to vessels of more than 100 tons burden, from the accumulation of sand in the river. Many inhabitants are employed in ship-building, and various branches of nected with it. The most important manufactures are those of serge and inferior broad cloth, besides some of patent lace, which employ about 800 persons; there are also tanyards, a paper-mill, an iron foundery, and extensive works for the manufacture of pottery, bricks, and tiles. Fishing nets, which are woven in a loom, are also made here. Lead ore has been found in the neighbourhood, and limestone is abundant. The weekly market is held on Friday, and is celebrated for extensive dealings in corn and provisions. Population in 1801, 3748; in 1821, 5079; in 1831, 6840.

BASINGSTOKE; a market-town in the county of Hants, distant from London forty-five miles W. S. W., on the road to Exeter by Salisbury. It is situated near the source of the small river Loddon. It consists of several streets, paved and lighted, well supplied with water, and containing some neat and well-built houses. It possesses a handsome market-house, over which is a town-hall, in which the petty sessions and the various meetings of the magistrates are held. Races are held here annually in September. The principal business carried on here is the trade in corn and malt, which is conducted to a considerable extent, and is facilitated in a great degree by the situation of the town at the junction of five important roads, and also by the Basingstoke canal which extends to the river Wey in Surrey, and thus communicating with the Thames, opens a passage to London. This canal was completed in 1796, at an expense of £180,000. In 1821, 365 families were returned s *employed* here in various trades and manufactures, of whom the majority were engaged in that of druggets and shalloons, but this branch of manufacture has declined considerably of late years. The market-day is Wednesday. Population in 1831, 3581.

BASS-ROCK; an island rock, consisting of reen-stone and trap tuff, situated at the mouth of he Frith of Forth, at the distance of about a mile nd a half from the coast of East Lothian, long. 2° 5' W. lat. 56° 3' N. It is a mile in circumference, nd rises precipitously more than 400 feet above he level of the sea, the depth of the water at its base being from thirty to forty fathoms. It can e approached with safety only in fine weather, nd is inaccessible on all sides except to the southwest, where one narrow passage may be ascended with difficulty. Near this passage is a castle, now ruins, but once a place of great strength, consisting of four square towers and connecting works. uring the persecution of the Covenanters, in the igns of Charles II. and James II., this castle was ade a state prison, and many unhappy Whigs and Covenanters were confined in it, some of whom perished under the hardships and privations which ey were made to undergo. At the revolution, hen the Stuarts were driven from the throne, a rty of King James's adherents kept possession the rock, and obstinately defended it for several years against the new dynasty. Being in possession of a boat, which they hoisted upon the rock, out of the reach of attack, and let down at pleasure, they supported themselves by making piratical attacks on passing craft; they had also some sources in the rock itself, which, besides a fountain of water, and innumerable sea-fowl, furnishes pasturage sufficient for the maintenance of a few eep and a rabbit-warren. The boat, however, s at last seized, and the party was obliged to rrender, the Bass-rock being thus the last piece of British ground which yielded up the claims of the Stuart family. After this, the castle and its fortifications were dismantled.

The base of the rock is perforated completely through from east to west by a natural cavern fearfully dark in the centre, and through which the sea frequently dashes and roars with astounding violence, but which may be examined at low water on a calm day. When the tide is out, the water remaining in this curious fissure, at a few yards from its mouth, is not more than knee-deep. The young fishermen often go through it though its aspect is exceedingly terrific. At one of the entrances to this cavern it appears as if the Bass were composed of two immense rocks, the larger of which leans diagonally against the smaller, leaving this narrow chasm between them at the bottom, but closely joining with each other at all other points. There are several other caverns of considerable length, the openings into which resemble fretted Gothic windows or doors that have been made to deviate from the perpendicular by time or violence.

The Bass is now the property of Sir Hew Dalrymple Hamilton of North Berwick. The sea-fowl (particularly gannet or solan geese) which resort to it during the breeding season are innumerable. For the privilege of killing the fowl, the rock is rented at about £30 annually; it also draws about £10 as a pasturage for sheep. In Scotland, not including the far off Hebrides, solan geese only frequent the Bass and Ailsa Craig, a rock in the Frith of Clyde very similar to the Bass. They regularly arrive, year after year, at the end of February or beginning of March. At first a small flight is seen to wheel round the rock, and then alight on its precipitous sides with the most clamorous screams; these are soon followed by other flights, each more numerous than that which preceded it, and in a very few days after the arrival of the scouts and vanguard, the whole of the migratory colony is assembled, and no more stragglers are seen to arrive. They generally leave the Bass in parties, as they came, towards the end of October, though, occasionally, when the winter is mild and fish abundant in the surrounding sea, they forego their journey to distant parts of the world, and stay there the whole year round. They lay several eggs each, but only sit upon one, which they hatch on the face of the bare rock. Their season of incubation is in June and July, when the cliffs literally seem covered with their snow-white plumage. A curious method is used by the fishermen in the neighbourhood to catch them: they take a small wooden plank, which is sunk a little below the surface of the sea by means of a stone or a piece of lead; on this plank they put a herring, and then drag the plank after them by a long rope, which leaves the trap considerably astern of the boat. The bird, attracted by the sight of its favourite food, wheels two or three times in the air, and then plunges down with such rapidity, that it often transfixes the plank with its bill, and is almost invariably stunned or killed by the shock. But, of course, their largest numbers are taken in the usual way, by descending the rock, attached to ropes, and killing them on their seats.

The plumage of the Solan geese, which is beautifully white and soft, is sold to upholsterers and others, who employ it in making feather-beds. Their flesh has a strong, fishy flavour, but is yet relished by some.

BATHGATE; a parish and town of Scotland, in Linlithgowshire. The parish extends seven miles in length by two in breadth, is highly cultivated, and abounds in lime-stone, iron-stone, free-stone, and coal. Silver was anciently wrought to a great extent, but the vein is exhausted or lost. The town is situated on the mid road between Edinburgh and Glasgow, eighteen miles distant from the former, and twenty-four from the latter city. From its situation, it has been considered as the Gandercleugh of the far-famed Jedediah Cleishbotham. Of late, an educational institution has been established here, endowed by Mr Newlands of Jamaica, a native of the town. It maintains five teachers, from whom all the children in the parish receive an excellent education. The inhabitants are chiefly employed in the neighbouring lime and coal works, and in weaving for the Glasgow manufacturers. Population of town and parish in 1831, 3593.

BATTLE; a market-town in the county of Sussex, distant from London fifty-six miles S. E; from Hastings eight miles N. W. It took its name from being the scene of the important battle (usually called the battle of Hastings) fought on the 14th Oct. 1066, between William, duke of Normandy, and Harold, king of England, in which the latter lost his crown and life. In commemoration of the event, the Conqueror founded a magnificent abbey here, which is now in ruins, with the exception of the gate-house. The town gradually sprung up in the vicinity of the abbey. It consists principally of a single street, and is now famous for the manufacture of fine gunpowder, for which there are several mills. Population in 1831, 2999.

The erection of *Battle Abbey* was commenced by William the Conqueror in 1067, in conformity with a vow which he had made before the fight, but it was not completed till 1094, in the reign of Rufus. The high altar is asserted to have been placed on the spot where the dead body of Harold was found. It is more probable, however, as other authorities record, that the spot was that on which the royal standard was raised at the commencement of the battle. The house was originally intended to contain one hundred and forty monks, but only sixty were placed in it, who were brought from the monastery of Marmoustier in Normandy. Many manors were bestowed upon it, along with the most ample privileges,—exemption from all taxation, the rights of a free warren, treasure trove, and sanctuary; independence of episcopal jurisdiction; and, to the abbot, the singular prerogative of pardoning any condemned thief or robber whom he should meet on his way to execution. Its possessions, in course of time, were greatly extended, through the liberality of its regal patrons. The abbot enjoyed the dignity of wearing the mitre, and was always summoned to parliament so long as the ancient religion lasted. The last individual who held the office was named John Hamond. He was elected in 1529, and in 1538 he surrendered the monastery to the King. After the dissolution the property was granted to a person named Gilmer, who, after pulling down a great part of the buildings and disposing of the materials, sold the place to Sir Anthony Browne. The latter soon after commenced the erection of a dwelling-house on the site of part of the old monastery, which was finished by his son, the first Lord Montague. This building, however, fell afterwards into ruins; but the estate having been purchased by Sir Thomas Webster, the ancestor of the present Sir Godfrey Webster, a new house was erected, which [illegible] exists. It forms one of the sides of what appears to have been originally a complete quadrangle, of great spaciousness. The entire circuit of the ruins of the abbey, indeed, is not much short of a mile. Only a fragment of the church now remains, but from which it is impossible to trace either its form or extent. The apartment over the great gateway was long used as a town-house, until the [illegible] September, 1794, when the roof was driven in by a violent storm, and it has not been since repaired.

BEAMINSTER; a market-town in the county of Dorset, 141 miles W. S. W. from London. It is situated in a fertile vale on the banks of the river Birton, which is formed by the union of several rivulets rising in the immediate vicinity. It is a place of considerable antiquity, but most of the houses are comparatively modern, as it has three times "suffered severely from fire." The first of these occurrences took place in 1644, during the civil wars, the second in 1684, and the third in 1781. Many of the inhabitants are employed in the manufacture of sail-cloth; that of woollen cloth, formerly the principal one, has begun to decline. There are also potteries for the [illegible] kinds of earthen ware, and manufactories of [illegible] iron, and copper-ware. The market-day is Thursday. Population in 1831, 2968.

BEAUMARIS; a town in the island of Anglesey, North Wales, 241 miles N. W. from London. It has a small harbour opposite Bangor, at the entrance of the straits of Menai. The town consists principally of one street, which is spacious, and contains many handsome houses. It has of late been much resorted to in the summer-season, as a bathing place. A steam-boat plies during [illegible] months of the year between this place and Liverpool. Elegant public baths, to which a reading-room is attached, have lately been erected. The situation is very fine, and the strand convenient. The view from the green commands a fine prospect of a portion of the strait inclosed by the promontory called the Orme's head, while the distance is bounded by the Caernarvon mountains, which rise ridge on ridge till they terminate in the [illegible] Snowdon. Population in 1831, 2497.

Beaumaris Castle was built by Edward I., to overawe the Welsh, whom he had, after an arduous struggle, subdued. The castle was the parent of the town, which Edward surrounded with walls, incorporated, and endowed with many privileges. The place was originally called [illegible], but was changed to Beaumaris, from, as the interpretation most generally followed, *beau* fine, and [illegible] a marsh. A low marshy site was selected, for the purpose of having a fosse round the castle, which being filled with water from the sea, would enable vessels of a small size, by means of a canal, to discharge their lading close under the walls of the fortress. In the 17th volume of the "Beauties of England and Wales," it is stated that "Part of the canal, till very lately, was visible under the walls of *Llyn y Green*, and the chains for mooring vessels at the quay. The lowness of the site, the expansive diameter of its circular towers and [illegible] tions, together with the dilapidated state of its walls, deprives the structure, though a [illegible] one, of that prominent character and imposing effect so strikingly apparent in the grander piles of Caernarvon and Conway. The shape approaches to an oblong square, comprising a [illegible] the castle. This outer vallum consists of low but massy embattled walls, flanked by ten circular towers." The principal entrance of the castle faces the sea; within the fortified envelope, equidistant from the walls, is the body of the castle, the height of which far exceeds the envelope; and at a distance appears to rise majestically from it, as from a base. It is nearly quadrangular, with a grand round tower at each angle, and another in the centre of each face. The interior consists of an area, 190 feet square, with obtuse corners. The centre of the north-west side contains a great hall, seventy feet long and twenty-three broad, with a proportionate height; it has five large pointed windows, which form a handsome front to the inner quadrangle. On the eastern side of the area there are remains of a chapel, the sides of which are ornamented with receding pointed arches. The elegantly-groined roof is supported by ribs springing from pilasters, between each of which is a long narrow window. There was a communication between the several parts of the inner court by means of a narrow surrounding gallery, a portion of which is still entire. The ruins of the castle are covered with gillyflowers, but which, as is stated, grow no where else in Anglesey. The castle was erected on lands belonging to several proprietors, whom Edward I., removed to distant places, remunerating them by estates, probably sequestrated. The castle is the property of the crown. Within the walls a tennis-court, fives-court, and bowling-green have been formed for the amusement of the inhabitants of Beaumaris.

BEAUVAIS; an arrondissement of the department of the Oise, in France, comprehending twelve cantons and 244 communes, and containing 130,263 inhabitants.

Beauvais, the chief city, is finely situated on the river Therain. The houses are chiefly of wood, and the trade of the place consists principally in the manufacture of tapestry, serges, and woollen cloth. Population 12,800.

The site of Beauvais was occupied, in very remote times, by a city, which is mentioned in the "Commentaries of Cæsar" by the name of Cæsaromagus, and which it afterwards dropped for that of Bellovacum, derived from a Belgian people, the Bellovaci, by whom it was inhabited. It was ravaged by the Normans in the year 850, and at other periods; and few cities have experienced more calamities and frequent fires than Beauvais. The town still exults in the glory of having sustained two very formidable sieges without being taken. The first of these was in the year 1443, when the English were repulsed by the devoted [illegible] of Jean Signière; the second was in 1472, when Charles the Bold, Duke of Burgundy, unsuccessfully besieged it with 80,000 men. On this occasion, the females of Beauvais, headed by Jane [illegible], joined the garrison and fought with uncommon intrepidity. This heroine herself, on one occasion, seized the flag which the enemy were about to plant on the walls, and threw from the [illegible] the soldier by whom it was carried. The [illegible] were obliged to withdraw. Until the [illegible], this event was annually commemorated, on the [illegible] of July, by a procession, in which the [illegible] marched first. The cathedral church of [illegible] is the principal architectural ornament of the town. The building was commenced in the year [illegible]. It is particularly noted for its choir, which is regarded as a master-piece of Gothic architecture, being as much admired for its height and breadth as for the lightness of the work and the fine arrangement of the vault and its outworks. It has ten pillars on each side of its length, with chapels all around. The pavement of the sanctuary, which is very large, is all of marble. This magnificent building seems never to have been finished.

BECCLES; a market-town in the county of Suffolk, 109 miles N. E. from London. It is situated on, and bounded on the north and west by the river Waveney, which is navigable from here to Yarmouth. It is a large and well built town, consisting of several streets diverging from a centre, in which is an extensive area used as a market-place. The houses are in general handsome, and there is a good supply of water for the use of the inhabitants. The environs are agreeable, and near the town is a good race-course with commodious stands, on which races are held annually. Saturday is the market-day. The principal trade is in corn and malt. Population in 1831, 3862.

BEDDGELART or BETHGELERT; a parish in Wales, including a village of the same name, the latter distant from Caernarvon twelve miles S. E. The village, which consists of a number of cottages, stands at the junction of the rivers Colwyn and Glaslyn, in one of the retired and romantic valleys in Wales, inclosed on every side by lofty and precipitous mountains. Some of the inhabitants act as guides to the top of Snowdon, and obtain a considerable emolument from this source during the summer months. There is a good inn, which is almost entirely supported by tourists. The name of the place signifies "*the grave of Gelert.*" There is a tradition that a dog named Gelert, belonging to Llewellyn, the last prince of Wales, preserved the infant child of his master from the attack of a wolf. On the return of the father, he met the dog covered with blood, and seeing the clothes which covered his child's bed sprinkled with the same, he instantly conceived the idea that the dog had killed his child, and slew him on the spot. Discovering his mistake, he caused the dog to be buried in the centre of the valley, where a stone is yet shown as marking the spot. Within a mile of the village is the celebrated pass of Aberglaslyn. Population in 1831, 1071.

BEDFORD LEVEL (*a.*); a large tract of low land in England, consisting of about 400,000 acres. Peterborough Fen, which is that part of the Level running into Northamptonshire, and extending between Peterborough and Crowland, contains between 6000 and 7000 acres. One-seventh part of the Level is situated in Huntingdonshire. Nearly the whole of the Isle of Ely, which forms the northern division of Cambridgeshire, consists of this marshy ground. The south-east part of Lincolnshire,—usually termed Holland,—extending to the river Witham on the north, is a fenny district included in the Bedford Level: 63,000 acres are situated in Norfolk and 30,000 in Suffolk.

There is abundant evidence to prove that this part of the country was formerly dry land, at a much lower level than the present surface. From the convulsions of nature, and subsequently owing to embankments improperly made, which prevented the waters from the uplands flowing into channels through which they might discharge themselves into the sea, the tract was at length reduced to the state of a morass, where the waters, stagnating and becoming putrid, produced miasma destructive to the health of the inhabitants; while this extensive district became impassable even to boats, in consequence of the sedge, reed, and slime with which it was covered.

The Roman emperor, Severus, who died in the beginning of the third century of the Christian era, was the first who intersected these fens with causeways. One of these was twenty-four miles long, extending from Denver, in Norfolk, to Peterborough. It was sixty feet broad, composed of gravel three feet in depth. This causeway is now covered with moor, from three to five feet in thickness. At that early period this low land, though damp, was by no means impassable; on the contrary, it appears that, up to the thirteenth century, the waters here usually flowed in natural channels, and had not devastated the surrounding country.

Dugdale relates, that in the year 1236, on the morrow after Martinmas Day, and for the space of eight days more, the winds were so boisterous that the sea was raised much higher than its usual bounds, and broke in at Wisbeach and other places of this district, so that many people and cattle, together with numerous small craft, were destroyed; and those of the inhabitants who survived were reduced to great distress. About seventeen years after the disaster, a similar accident again happened; and the inhabitants were called upon, by command of the king, to repair the banks. This compulsory work was performed but very inefficiently, for, within a few years, the sea-banks were again broken by the violence of the tides.

In 1436, the project of draining these fens engaged the attention of many persons of wealth and consideration in the country. Vast funds were expended in making ditches and banks impregnable, as it was supposed, to all assaults from inundations; but the next winter being wet and windy, the river Ouse, with the accession of its tributary brooks, swelled into a mighty torrent, and swept away all the bulwarks opposed to its progress.

In the year 1634, William Earl of Bedford (hence the name *Bedford Level*) undertook to drain these fens, stipulating to receive, as a compensation for the expense and trouble incurred, 95,000 acres of the reclaimed land: £100,000 were expended in the course of three years in this endeavour, and the work was partially accomplished; but the embankments proved defective, and the whole was again allowed to lie waste until the year 1649, when the Earl once more attempted the task for his former share of 95,000 acres. Three hundred thousand pounds were then laid out in draining, embanking, &c., and this time with success, as far as regarded the accomplishment of the work, but to the ruin of those who had been admitted shares, since the sum expended was much more than the 95,000 acres were worth. A regular system for continuing the draining and preserving the land already reclaimed, was now established; and, in 1664, a company was incorporated for its management: this consisted of one governor, six bailiffs, and twenty conservators; and, to the present day, the fens are managed and preserved by this corporation. Numerous cuts have been made, intersecting every part; some of these are so large and deep as to serve for navigable canals. In the Isle of Ely, the Old and New Bedford rivers are two cuts running nearly parallel to each other;—these are both navigable for upwards of twenty miles from Erith to Denvers. Various expedients are used for the proper draining of the marshes: where the regular and common means have failed, windmills have been erected which raise the water to the requisite height to admit of its being conveyed to receptacles sufficiently elevated, by which it may be carried off into its proper channel. These numerous windmills give a strange aspect to the Isle of Ely, where the towns and villages are built on the most elevated spots, which appear like islands rising from amidst low and wet marshes. Recourse has been had to numerous projects to complete and secure the drainage of the fens; and a vast expense has been incurred, sometimes much greater than the value of the land reclaimed. In Huntingdonshire, about the latter end of the last century, the tax raised on the land by the conservators, for its drainage and the preserving of its embankments, was in some instances so great, that the farmers preferred forfeiting their land rather than paying so exorbitantly for its preservation. In the present day, the art of drainage is better understood than when first this stupendous work was undertaken; but even now, in many places the farmer is still liable to have the produce of his grounds carried away by sudden inundations. The peculiar situation of the Level renders it the receiver of the waters of nine counties, and therefore it is difficult to provide a sufficient outlet to the sea by which the descending torrent may find a safe egress. The great error committed in the commencement of the drainage was the making numerous small cuts instead of larger and deeper channels, by which, with the same inclination of descent, the water would safely pour into the sea without any risk of overflowing its banks; since in a narrow and shallow channel, owing to the smaller force exercised by the lesser body of water, the bottom must be made at a much greater inclination to cause the free flowing of the stream. Great improvements are now, however, constantly being made in the drainage and embankment of this extensive tract of land, and the errors of former methods are, as far as possible, being remedied.

BEE (*a.*) In addition to the description, given in the body of the work, of this interesting insect, we shall here introduce some practical observations on the management of bees as an object of rural economy.

A hive generally contains about twenty or twenty-five thousand bees. It is said that before swarming time, there may be upwards of thirty thousand in a populous hive, the drones varying from six hundred to two thousand. The queen is the principal bee in the whole community, and is treated with great attention by the workers. The increase of the hive depends, of course, entirely upon her. Reaumur states that the female, or queen, lays in spring as many as twelve thousand eggs, in the lapse of twenty-four days, or at the rate of five hundred each day. Bonner's estimate is somewhat lower, and probably nearer the truth, when he reckons, that, previous to the swarming season, she may lay about three hundred each day. It must be understood, however, that these estimates are only applicable to hives in a strong and healthy condition, and must vary according to the prolific nature of the queen. The queen is the bee which lays the whole of the eggs in a hive, and consequently, is a female; the drones are the males, and the workers are undeveloped females. If the queen be accidentally killed, or intentionally removed from a hive, the bees soon become sensible of their loss, and a good deal of bustle and confusion ensue. This, however lasts but a short time, for in the course of an hour or two the bees set about repairing their loss. For this purpose, they choose a larva of their own class, about two or three days old, pull down a few of the adjacent cells, and enlarge the selected one; and by feeding this larva with food exclusively destined for the nourishment of royal larvæ, a queen is in due time produced. The common workers perform the whole labour, both with respect to constructing the comb and feeding the larvæ or young, as well as collecting and storing up their precious treasure.

Those not experienced in the nature of bees, may be greatly deceived in the purchasing of hives for stock. It can only be by a minute examination of the interior of the hive, that a just estimate of its value may be gained; this, however, is attended with much difficulty, and some danger; but by the outward appearance and weight of the hive he may perhaps arrive at nearly a correct conjecture. The best season for purchasing is either in February or at the swarming season; in February it has survived the rigour of winter, and the purchaser has then only to attend to the population of the hive, or its apparent age. Let the purchaser observe with attention the number of bees which enter the hive loaded with the fruits of their industry; and if an apparently equal number departs in great bustle and hurry, he may then conjecture the hive to be in good health and well populated; and if a loud humming noise is heard within the hive, it is a certain sign of its strength and prosperity. The weight of a hive in February should never be under fifteen pounds, nor in autumn under thirty; and care should be taken that the hive is new, for in old hives a quantity of farina or bee-head accumulates, which adds considerably to its weight; the purchaser should also reject a hive when he observes its straw decayed and rotten, the ligaments loose, and frequent blotches over it, for it will cost him incessant trouble and vexation to keep it in a sufficient state of preservation, so as to maintain the health of his bees.

The apiary, or place where the bee-hives are placed, should in very warm situations be made to face the east, and in colder districts the south-east. It should be well protected from high winds, which not only prevent the bees from leaving the hive in quest of honey, but they also surprise them in the fields, and often kill them by dashing them against the trees and rocks or into rivers. The hives in an apiary should always be placed in a right line; but should the number of the hives be great, and the situation not capacious enough to admit of their being placed longitudinally, it is more advisable to place them over one another on shelves than in double rows on the ground. A bee, on leaving the hive, generally forms an angle of about forty-five with the horizon; the elevation of the hive should therefore be about two feet from the ground, in order to protect it from humidity. The greater the elevation of the hive, the longer is the flight of the swarm; and when they are at a certain point of elevation, the swarms are lost for ever to the proprietor. If the hives are to be placed in a double row, the binder ones should alternate with, and be placed at such at distance from, the front row, that when the bees take their flight no obstruction is offered to their ascent. Huish recommends placing every hive upon a single pedestal, and at two or three feet distance from each other. By this means, when any thing happens to one hive, the others are less likely to be disturbed than when placed on a shelf in a bee-house; and the hive may be chained down and locked. It is usual to have three or four legs or supports to the bee-boards; but those who have tried one will never resort to more, as one is a much better protection from vermin and insects. The space in front of the apiary should be kept clear of high plants for two or three yards.

The variety of bees employed is a matter of some consequence. To the common observer all working bees, as to external appearance, are nearly the same; but to those who examine them with attention, the difference in size is very distinguishable; and they are, in their vicious and gentle, indolent and active natures, essentially different. Of the stock which Howison had in 1810, it required 250 to weigh an ounce; but they were so vicious and lazy that he changed it for a smaller variety, which possessed much better dispositions, and of which it required 296, on an average, to weigh an ounce. Whether size and disposition are invariably connected, is not determined.

The best material and form for hives is a straw thimble or flower-pot placed in an inverted position. Hives made of straw, as now in use, have a great advantage over those made of wood and other materials, from the effectual defence they afford against the extremes of heat in summer and cold in winter.

The size of hives should correspond as nearly as possible with that of the swarms. This has not had that attention paid to it which the subject demands, as much of the success in the management of the bees depends on that circumstance. From blind instinct bees endeavour to fill with combs whatever hive they are put into, before they begin to gather honey. Owing to this, when the hive is too large for its inhabitants, the time for collecting their winter store is spent in unprofitable labour; and starvation is the consequence. This evil also extends to occasioning late swarming the next summer; it being long before the hive becomes so filled with young bees as to produce a necessity for emigration, from which cause the season is too far advanced for the young colonies to procure a winter stock. A full-sized straw hive will hold three pecks; a small-sized from one and a half to two pecks.

The Polish hive appears to be the second in merit to that described, and perhaps it may deserve the preference, if the mode of using it were generally known. It is simply the trunk of a tree, of a foot or fourteen inches in diameter, and about nine feet long. It is scooped out (boring in this country would be better) for about six feet from one end, so as to form a hollow cylinder of that length, and of six or eight inches diameter within. Part of the circumference of this cylinder is cut out during the greater part of its length, about four inches wide, and a slip of wood is made to fit the opening. On the sides of this slip or segment notches are made every two or three inches, of sufficient size to allow a single bee to pass. This slip may be furnished with hinges, and with a lock and key; but in Poland it is merely fastened in by a wedge. All that is wanting to complete the hive is a cover at top to throw off the rain; and then it requires only to be placed upright like a strong post in the garden, so as the bottom of the hollow cylinder may be not nearer the ground than two feet, and the opening slip look to the south. When a swarm is to be put in, the tree, with the door or slip opened, is placed obliquely over it; when the bees enter the door is closed, and the holes stopped with clay till the hive is planted or placed upright. When honey is wanted, the door is opened during the finest part of a warm day, when most of the bees are out; its entire state is seen from top to bottom, and the operator, with a segar in his mouth, or with a lighted rag, to keep off the bees from his hands, cuts out with a crooked knife as much comb as he thinks fit. In this way fresh honey is obtained during the summer, the bees are never cramped for room, nor does it become necessary to kill them. The old comb, however, is annually cut out, to prevent or lessen the tendency to swarming, which, notwithstanding this and the size of their dwelling, they generally do once a year; for the laws of nature are not to be changed. Though it be a fact that a small swarm of bees will not do well in a large hive; yet, if the hive extend in length and not in breadth, it is admitted both by Huber and Huish that they will thrive in it. "If too great a diameter," says Huber, "be not given to the abode of the bee, it may without danger be increased in the elevation; their success in the hollow trees, their natural domicile, incontestably proves the truth of this assertion."

The feeding of bees is generally deferred till winter or spring; but this is a most erroneous practice. Hives should be examined in the course of the month of September, or about the time of killing the drones; and if a large hive does not weigh thirty pounds, it will be necessary to allow it half a pound of honey, or the same quantity of soft sugar made into syrup, for every pound that it is deficient of that weight; and in like proportion to smaller hives. This work must not be delayed, that time may be given for the bees to make the deposit in their empty cells before they are rendered torpid by the cold. Sugar simply dissolved in water (which is a common practice), and sugar boiled with water into a syrup, form compounds very differently suited for the winter store of bees. When the former is wanted for their immediate nourishment, as in spring, it will answer equally as a syrup; but if to be laid up as store, the heat of the hive quickly evaporating the water, leaves the sugar in dry crystals, not to be acted upon by the trunks of the bees. Hives may be killed with hunger while some pounds' weight of sugar remain in this state in their cells. The boiling of sugar into syrup forms a closer combination with the water, by which it is prevented from flying off, and a consistence resembling that of honey retained. Howison had frequent experience of hives, not containing a pound of honey, preserved in perfect health through the winter with sugar so prepared, when given in proper time and in sufficient quantity. The quantity of food which ought to be given to a hive may be calculated in the proportion of two pounds a month; but if the weather be very cold, a less quantity will suffice. When a hive is fed in the spring, it should always be after sunset, when the bees have returned from the fields; otherwise the most disastrous consequences may ensue from the robberies committed by the bees of other hives. If they are fed in the morning, it must be before sunrise, and the entrance instantly stopped to keep out depredators; for as the bees leave the hive on the very first appearance of day-light, a later period would prevent the return of all those who had left the hive previous to the entrance being secured. The following receipt for bees is recommended as beneficial and economical. To two quarts of good ale put one pound of moist sugar; boil them until the sugar is wholly dissolved, carefully skimming it; when it is cold, it will be found of the consistency of honey, and it may be given to the bees in the following manner: If the bees are in the plain cottage hive, an eek of the same diameter as the hive must be provided, and from three to four inches in height. When the sun is set, and the bees have retired, let the hive be gently raised, and the eek placed on the stool; then, having filled a soup-plate with the food, place it on the eek, and put down the hive. To prevent the bees being drowned in the liquid, it is necessary to place some straws over the plate, and over the straws a piece of paper, either thickly perforated or cut into nicks; these nicks, however, must not run parallel with the straws, but either across or diagonally; the entrance must then be closed, and the plate removed on the following morning, and the whole of the liquid will be transferred into the combs.

To wooden protect hives from the cold, they are covered with straw or rushes, about the end of September, or later, according to the climate and season. This is an essential business, as well covered hives always prosper better the following season than such as have not been covered. In October, the aperture at which the bees issue should generally be narrowed, so as only one bee may pass at a time. Indeed, as a very small portion of air is necessary for bees in their torpid state, it were better, during severe frosts, to be entirely shut up, as numbers of them are often lost from being enticed to quit the hive by the sunshine of a winter day. It will, however, be proper at times to remove, by a crooked wire, or similar instrument, the dead bees and other filth which the living at this season are unable to perform of themselves. To hives, whose stock of honey was sufficient for their maintenance, or those to which a proper quantity of sugar had been given for that purpose, no further attention will be necessary until the breeding season arrives. This, in warm situations, generally takes place about the beginning of May; and in cold, about a month after. The young bees, for a short time previous to their leaving their cells, and some after, requiring being fed with the same regularity that young birds are by their parents; and if the store in the hive be exhausted, and the weather such as not to admit of the working bees going abroad to collect food in sufficient quantity for themselves and their brood, the powerful principle of affection for their young compels them to part with what is not enough for their support, at the expense of their own lives. To prevent such accidents, it is advisable, if during the breeding season it rain for two successive days, to feed all the bees indiscriminately, as it would be difficult to ascertain those only who require it.

The swarming of bees generally commences in June, in some seasons earlier, and in cold climates or seasons later. The first swarming is so long preceded by the appearance of drones, and hanging out of working bees, that if the time of their leaving the hive is not observed, it must be owing to want of care. The signs of the second are, however, more equivocal, the most certain being that of the queen, a day or two before swarming, at intervals of a few minutes, giving out a sound a good deal resembling that of a cricket. It frequently happens that the swarm will leave the old hive, and return again several times, which is always owing to the queen not having accompanied them, or from having dropped on the ground, being too young to fly to a distance. Gooseberry, currant, or other low bushes, should be planted at a short distance from the hives, for the bees to swarm upon, otherwise they are apt to fly away. When a hive yields more than two swarms, these should uniformly be joined to others that are weak, as from the lateness of the season, and deficiency in number, they will otherwise perish. This junction is easily formed, by inverting at night the hive in which they are, and placing over it the one you intend them to enter. They soon ascend, and apparently with no opposition from the former possessors. Should the weather, for some days after swarming, be unfavourable for the bees going out, they must be fed with care until it clears up, otherwise the young swarm will run a great risk of dying.

The honey may be taken from hives of the common construction by three modes, partial deprivation, total deprivation, and suffocation.

Partial deprivation is performed about the beginning of September. Having ascertained the weight of the hive, and consequently the quantity of honeycomb which is to be extracted, begin the operation as soon as evening sets in, by inverting the full hive, and placing an empty one over it; particular care must be taken that the two hives are of the same diameter, for if they differ in their dimensions it will not be possible to effect the driving of the bees. The hives being placed in each other, a sheet or large table-cloth must be tied round them at their point of junction, in order to prevent the bees from molesting the operator. The hives being thus arranged, beat the sides gently with a stick or the hand, but particular caution must be used to beat it on those parts to which the combs are attached, and which will be found parallel with the entrance of the hive. The ascent of the bees into the upper hive will be known by a loud humming noise, indicative of the pleasure in finding an asylum from their enemy; in a few minutes the whole community will have ascended, and the hive with the bees in it may be placed upon the pedestal from which the full hive was removed. The hive from which the bees have been driven must then be taken into the house, and the operation of cutting out the honeycomb commenced. Having extracted the requisite quantity of comb, this opportunity must be embraced of inspecting the hive, and of cleaning it from any noxious matter. In cutting the combs, however, particular attention should be paid not to cut into two or three combs at once, but having commenced the cutting of one, to pursue it to the top of the hive; and this caution is necessary for two reasons. If you begin the cutting of two or three combs at one time, were you to extract the whole of them, you would perhaps take too much; and secondly, to stop in the middle of a comb would be attended with very pernicious consequences, as the honey would drop from the cells which have been cut in two, and then the bees, on being returned to their native hive, might be drowned in their own sweets. The bees also, in their return to their natural domicile, being still under the impression of fear, would not give so much attention to the honey which flows from the divided cells; and as it would fall on the board, and from that on the ground, the bees belonging to the other hives would immediately scent the wasted treasure, and a general attack on the deprivated hive might be dreaded. The deprivation of the honeycomb being effected, the hive may be returned to its former position, and reversing the hive which contains the bees, and placing the deprivated hive over it, they may be left in that situation till the morning, when the bees will be found to have taken possession of their native hive, and, if the season proves fine, may replenish what they have lost.

Total deprivation is effected in the same manner, but earlier in the season, immediately after the first swarm; and the bees, instead of being returned to a remnant of honey in their old hive, remain in the new empty one: which they will sometimes, though rarely, fill with comb. By this mode, it is to be observed, very little honey is obtained, the bees in June and July being occupied chiefly in breeding, and one, if not two, swarms are lost.

Suffocation is performed when the season of flowers begins to decline, and generally in October. The smoke of paper, or linen rag soaked or smeared with melted sulphur, is introduced to the hive by placing it in a hole in the ground, where a few shreds of these articles are undergoing a smothering combustion; or the full hive may be placed on an empty one, inverted as in partial deprivation, and the sulphureous smoke introduced by a fumigating bellows, &c. The bees will fall from the upper to the lower hive in a few minutes, when they may be removed and buried, to prevent resuscitation. Such a death seems one of the easiest, both to the insects themselves, and to human feelings. Many plans have been devised for obtaining the honey without the destruction of the bees, the most successful of which appears to be that of Mr Nutt of Lincolnshire, which consists in the construction of the hive and regulation of its temperature.

In *Russia*, the management of bees forms an important branch of husbandry. It is there conducted on a large scale, and affords the principal means of subsistence to some of the nations or tribes who inhabit the vast Russian territory. The Bashkirs, and some other tribes inhabiting the country west of the southern Ural, are those who devote themselves the most exclusively to this branch of business, which seems to be carried on with the greatest vigour in the governments of Kazan and Oufa. There are individuals among the Bashkirs who, besides their bee-gardens, possess hundreds, and sometimes thousands, of wild-bee hives in the forests. It is only necessary to describe the process in use among the Bashkirs, as it is the same which is followed by the other tribes that apply themselves to this useful pursuit. It is most usual to prepare in the forests for the bees a very peculiar description of hives, which the bees spontaneously enter, and there deposit their honey. When it is the intention of the Bashkirs to prepare receptacles for the bees, they repair to the forest, and select the straightest and strongest trees which they can find, always preferring the hardest kinds of timber. On these, at the height of twenty-four or thirty feet above the ground, they construct the bee-house by hollowing out a large smooth cavity in the trunk of the tree with a tool resembling a chisel. When the work is completed, the aperture is closed with a board, in which are several holes large enough to afford the bees free ingress and egress. The manner in which the Bashkirs execute this rather difficult work, and the agility with which they ascend the loftiest and smoothest trees, affords a fine display of dexterity and skill.

A rope and a sharp hatchet is all that they require to assist their ascent. The workman places himself against the trunk of the tree, around which and his own body he fastens a rope. He then with his hatchet cuts a notch in the trunk at a certain height, and setting his feet against the tree, springs to that height by the help of the rope. He supports himself by the rope, resting his feet in the notch until he has cut another, to which he ascends in the same manner; and this is continued until he reaches the desired point. As he is to make some stay there, he notches in the tree a more convenient stand for his feet than was before necessary: resting his feet in this, and supporting the weight of his body by the rope, he then commences his work, the tools required for which he has taken up in his girdle. It is always considered necessary to cut away the branches below the hive, in order to render the access more difficult to the bears, which still exist in considerable numbers in the Ural, and which are by far the most dangerous enemies known to the bee cultivator. Some of the measures adopted to secure the hives from the depredations of these animals are very curious. The most common contrivance is to insert a number of knives or iron spikes bent upwards into the trunk of the tree. The bear, by the exercise of great caution and sagacity, is generally able to clamber up a tree thus defended without much difficulty; but in sliding down again he seldom escapes with his life, or at least without being desperately wounded, being caught by the hooks and lacerated by the knives in the descent. Some old and experienced bears, who have learned what to expect from these instruments, have been known to loosen or break them with their paws as they went up. Another method, which is considered more certain than the former in its effects, is to suspend a thick and heavy block of wood before the aperture of the hive. This block the bear flings from him repeatedly with increasing fury; but as often as he does so, the block, of course, returns and hits him violent blows upon the head. Irritated to the utmost, the animal increases the violence of his efforts, and at last, exhausted by his rage and exertions, and partly stunned by the blows, falls upon the spikes that are planted on the ground to receive him. But a more ingenious contrivance than either of these is to take the bear in a trap of very simple construction. It is not unlike a large scale, such as we sometimes see in wholesale shops; consisting of a board with ropes at each corner united at the top. It is then fastened to a branch above the hive in such a manner that if left suspended perpendicularly, the board would be at some distance from the trunk. But when the rope is properly fastened to the branch, the board is drawn from the perpendicular, and attached slightly to the trunk on a level with the door of the hive, in such a manner that the fastening remains the only obstacle to prevent the bear from obtaining access to the hive. When the bear ascends and finds a seat which seems so admirably adapted to his convenience, he gets upon it, and soon commences tugging to remove the only obstacle between him and his desired prey; but as this obstacle is the fastening of the board to the trunk of the tree, the animal no sooner succeeds in his object than his seat swings off with him to its perpendicular. He thus remains suspended in the air, in a sufficiently mortifying situation, until some one arrives to shoot him: but sometimes he throws himself off, and is then impaled upon the pointed stakes which are planted round the tree.

It may be interesting to compare this method of dealing with bees at the eastern extremity of Europe, with the process which is pursued at the opposite extremity of the same continent.

In *Portugal*, when it is intended to form a colony of bees, a spot of ground is chosen exposed to the south, or south-east, well sheltered from the northern blasts, and surrounded with shrubs and flowers; the more of rosemary there is among these the better. In selecting a situation, the condition of the neighbouring grounds is a point of consideration, as bees are said to range as far as a league from their hives in quest of food. The situations being chosen, lanes five or six feet wide are cut through the shrubby thickets. The fences of these lanes are of about the same height, and are formed into small recesses or niches for the reception of the hives. The hive, which is formed of the rind of the cork-tree, is usually of a cylindrical shape, about twenty-seven inches high by fourteen in diameter. This is covered with an inverted earthenware pan, the edge of which projects over the cylinder like a cornice. The whole is fastened with wooden pegs, and the joints are stopped with peat. In the front of the cylinder, at the height of about eight inches, is a small aperture, at which the bees go in and out. The interior is divided into three equal parts, separated by cross sticks. Here the bees form their combs and cells, and deposit their honey. When the bees swarm, which is usually in May or June, the hives are placed to receive them where they alight. If they descend on a tree they are shaken off. The person who does this sometimes defends his face with a wire mask and his hands with gloves; but in general this precaution is not considered necessary, as it is known that bees only sting when much irritated. Sometimes the bees are so wild that they fly away when it is attempted to collect them. When this happens, they may still be recovered. A sheet is, during the night, spread out upon the ground near the swarm. They alight on this, when a hive with the entrance closed is placed upon them, and the whole is then carried home in the sheet. When the time arrives for collecting the honey, the business is usually performed during the heat of the day, when most of the bees are absent. The operator, whose head and hands are guarded in the manner before mentioned, is attended by a person with a small chafing dish, containing a coal fire, which is covered with damp peat, to make the greater smoke. The smoke is introduced into the hive from the top of the cylinder, when the bees which happen to be there either fly away or remain stupified at the bottom. The hive is then taken to pieces by drawing out the pegs, and the comb is cut out, except a small portion which is left to induce the bees to adopt it as the nucleus of a new comb. After this work has been performed, the hive is put together again, and replaced in its former situation. The apiarian often visits the ground to repair any accident that may have happened. He is careful not to destroy any snakes which may frequent the place, as they never molest the bees, but destroy the toads and lizards which are obnoxious to them. When a hive is decayed, it is taken asunder and fumigated, and then the bees forsake it and seek shelter in an adjoining hive which has been previously prepared for the purpose. This operation is commonly performed in the spring, when the flowers begin to open, and there is plenty before them. As the bees, in returning from their excursions, are heavily burdened and fatigued, great care is taken that there shall be nothing near the hives to obstruct their descent, which is not in a perpendicular but an oblique direction.

In *Greece*, hives are made of willow or osiers, fastened like our common dust baskets, wide at the tops, and narrow at the bottom, or plastered with clay or loam within and without. They are set the wide end upwards. The tops, being covered with broad flat sticks, are also covered with clay at the top; and, to secure them from the weather, they cover them with a tuft of straw, as we do. Along each of these sticks the bees fasten their combs, so that a comb may be taken out whole, without the least bruising, and with the greatest ease imaginable. To increase them, in spring time, that is, in March or April until the beginning of May, they divide them, just separating the sticks, on which the combs and bees are fastened, from one another with a knife; so taking out the first comb and bees together on each side, they put them into another basket in the same order as they were taken out, until they have equally divided them. After this, when they were both again accommodated with sticks and plaster, they set the new basket in the place of the old one, and the old one in some new place. And all this they do in the middle of the day, at such a time as the greatest part of the bees are abroad, who, at their coming home, without much difficulty, by this means divide themselves equally. This device hinders them from swarming and flying away. In August they take out their honey, which they do in the daytime also, while they are abroad; the bees being thereby, they say, disturbed least; at which time they take out the combs laden with honey as before, that is, beginning at each outside, and so taking away until they have left out such a quantity of combs in the middle as they judge will be sufficient to maintain the bees in winter; sweeping those bees that are on the combs they take out into the basket again, and again covering it with new sticks and plaster. It has been doubted whether, in England, the like quantity of honey may be taken without endangering a scarcity in winter, the bees probably not collecting so much. Let less, therefore, be taken away. By these means, it has been said, the great increase and multiplying of the stock would soon equalize and far exceed the little profit we make by destroying them.

In the *United States of America*, honey is largely used, and the culture of bees is therefore prosecuted to a much greater extent than in this country. The hives there are generally made of wood, and their usual size about ten or twelve inches square. A common board of an inch in thickness is generally used; and although some persons prefer two-inch plank, hives constructed in this manner are unnecessarily heavy and clumsy. Some bee-keepers erect sheds fronting the east or southwest; but excepting the protection they afford from the heat of the mid-day sun, but little advantage is considered to arise from sheds of this description. The more common mode therefore is, to drive three posts into the ground, leaving them about thirty inches above the surface; and upon the flat tops of these a board is securely fixed. On this board or platform, which ought to have a slight inclination towards the front, the hive is placed, a groove of sufficient depth to carry off the water having been previously cut in the platform. Besides this, there is also another board of similar dimensions placed upon the top of each hive, which answers the twofold purpose of screening them from the meridian sun, as well as from much of the rain that chances to fall. The cover may be screwed to the hive with a couple of screws, or held in its position by placing thereon a flat stone, which may be removed at pleasure. It is by no means unusual to see thirty or even sixty bee-hives, in an orchard or bee-garden, placed upon posts as above described, in many parts of the country. This is decidedly the best method of keeping bees for those who are in the habit of "driving" them when they take the honey; for the old-fashioned and barbarous plan of destroying the bees is very seldom resorted to. In this system of "driving," great facility is found to exist in the common square wooden hive; for since the mouths or openings of the new hives are quite regular, and of precisely the same dimensions as the old one, the openings of the two exactly correspond to each other.

The process of "driving" is exceedingly simple. After a sliding piece of thin board (fixed there for that purpose) has been moved forward so as to shut up the small opening which admits the bees into the hive, the hive is then moved gently from off the board upon which it stood, and carefully placed upon an empty hive, which must be in readiness, mouth upwards, to receive it; the sides of each exactly corresponding. A cord, of strap, which had been previously placed upon the ground, and under the empty hive, must be passed upwards over the one containing the bees, binding the two hives together as securely as possible, which may be easily effected where they are made in the manner and of the materials here described. This having been accomplished, the position of the hives must then be reversed, so that the full one may be underneath and its mouth upwards. It must then be struck smartly, but not forcibly, with some hard body (a short stick will answer very well), and after a few minutes' hammering the bees will have ascended into the empty hive. The fastening must then be quickly undone, and the new hive removed gently to the platform where the old one stood. The whole business, if judiciously managed, will not occupy more than a few minutes; and there will not probably remain behind more than a score or two of bees, which may be destroyed in the usual way, or else suffered to escape. There will at first be great turmoil and confusion amongst the bees in their new abode, so that it is generally considered prudent not to withdraw the slide that shuts them in until the middle or afternoon of the following day. In most cases they prudently begin to work as soon as they find themselves robbed of their store of sweets; but occasionally they continue dissatisfied for some time, and attack the neighbouring hives that have been undisturbed. The customary plan is to take away the whole of the honey in the hive from which the bees have been expelled, provided the season be sufficiently early to admit of their laying up an ample stock for the ensuing winter; but sometimes, when the swarm is not very strong, or when the summer is considerably advanced, only alternate courses of the honeycomb are extracted; in which case the bees have to be "driven" back into their old quarters. This, however, is but an indifferent plan; for since the weather generally is hot at that period of the year, there is often much damage done to the remaining honeycomb, and also considerable loss both of honey and bees.

Although the system of "driving" is pretty general amongst bee-keepers, of late years many persons have resorted to another plan, and, in some instances, with considerable success. The plan is invariably to keep the bees in open sheds; and instead of permitting the hives to throw off swarms annually, to *compel* them to take possession of new hives as often as may appear necessary. When a hive gives indications of throwing off a swarm it is slidden back upon the platform where it stands, and a new hive, with openings or passages *behind*, corresponding exactly with those in the old one, is pushed close up against it; so that the bees are under the necessity of passing through the new one whenever they go abroad; and in this new apartment the colony, which would have soon been thrown off as a new swarm, commences operations. An improvement upon compelling the occupants of the old hive to pass through the new one, consists in having an opening, in the rear of the old one, which has been kept closed until the new hive has been added to the other, but which may now be opened at pleasure by the withdrawal of a slide, by which means the bees will find an easy egress at the rear; for since the honeycomb is placed in rows parallel with the *sides* of the hive, there will be nothing to prevent a free passage to the rear after the front outlet has been closed. Where this plan is acted upon, the bee-houses should be open both in front and rear, so that it would be immaterial on which side the entrance was placed, although there is apparently some objection to the bees entering the hive on the contrary side to that which they have been accustomed to. Where the new hive has the appearance of being full of bees another empty hive may be added precisely in the same manner as the last, and where the platform is sufficiently capacious, a considerable number of hives may be joined to each other in the manner aforesaid, should it be deemed advisable to do so. When it becomes desirable to take away some honey, the process is easily effected. The hives being all exactly of the same dimensions, and the doors or openings of each hive having suitable slides, so as to close them when necessary, any hive which may be selected can be withdrawn in a moment after the bees having been "drummed out," and an empty one introduced in its place. In all the various processes of abstracting honey, where it is intended that the lives of the bees should be spared, care ought to be taken to perform it early in the season; since it is better to be rather too early than a little too late, for in the latter case the consequence is the almost certain loss of the hive.

In some of the forests of America, wild bees of the domestic or honey-bee species are so abundant that many persons make a livelihood by "bee-hunting," that is, by traversing the woods in search of the natural hives of the honey-bee. Bee-hunting requires a quick and practised eye, and some acquaintance with the habits of these useful and industrious insects; for where the trees are lofty, the foliage thick, and the surface of the ground rough and encumbered with fallen timber, the bee-hunter of long experience finds it difficult to keep up a successful chace with the honey-laden bees on their way to their storehouses in the hollow limbs of some decaying monarch of the forest. When he believes that he has discovered the retreat of the little wanderers, he deals upon the bole of the tree a few strokes, anxiously watching the crevice he observed the home-bound insects enter, and should there be a hive or family in some cavity far above him, the noise and concussion produced by the bee-hunter's blows will most probably create such a disturbance, that many of the inhabitants may be seen issuing from their suspected retreat. He next proceeds to hew down the tree; which having done, he lights a fire in order to smoke out or suffocate his victims. Sometimes a bee-tree will contain a large quantity of honey and honeycomb; but as the tree has to be hewn in pieces in order to get at the treasure (a portion of the honey is usually very old), together with the effect of the concussion when the tree falls, a large proportion of the prize is lost, or rendered useless, since much of the comb gets broken to pieces and mixed with the decayed and rotten wood. The honeycomb is commonly of greater value than the honey: for where bees are tolerably abundant, honey is scarcely saleable at any price; while bees'-wax is at all times a marketable article, either at the country stores or in any of the towns and cities. It is not unusual to find three or four hundred weight of honey and honeycomb in one of those bee-trees, but judging from the very dark colour of the comb, and the peculiar flavour of the honey, a portion of it appears to have been stored up during several years.

Besides the common bee, there are several other bees in Britain, which also produce honey, but which have never been domesticated. There is the common *humble bee*, black, with the hinder part of its abdomen white; the *black and red bee*; the *brown* or *foggy bee*, somewhat resembling the *carder* in its habits; and the *black bee*, noted for the fierce defence of its nest, which, after all, is not much worth plundering. In the habits of all these bees, there are circumstances which render their domestication almost impossible. The course of their life through the summer is as follows:—One bee alone having survived the rigours of winter, generally sets to work, about the early part of June, to construct a nest for herself and her future progeny: these nests are of different kinds, according to the habits of the insect; some of them, as the humble bee, going deep into the earth in dry banks; others preferring heaps of stone or gravel; and the brown, foggy, or moss bee, choosing always some bed of dry moss, generally of the long interwoven kinds called *hypnum*. The nest, as first constructed, is of small dimensions within: but when the bee has deposited her eggs, and young begin to be hatched, they all labour in common, and soon produce much more ample accommodations. The cells which we find in these nests are not the work of the old bee, but are formed by the young insects in the same manner as the cocoons of silk-worms; and when the perfect insect is released from them by the old bee, which the latter does by gnawing off their tops, they are then employed as honey-cups. The honey which is here deposited is not, however, intended as a store for winter: it is collected solely to meet the wants of the growing colony in rearing its young bees, which are fed on a mixed food of honey and pollen (dust from the flowers of plants) while they are in the caterpillar state. The wants of the young go on increasing for a great part of the summer, and the quantity of honey they consume is very large: towards the middle or latter part of September, however, the energies of the bees begin to wax fainter, and little further progress is made in adding to the colony, or in collecting honey. Cold and showery days begin, even by this time, to thin the number of the insect population, who are now seen creeping slowly, with damp and heavy wings, upon the stalks and petals of flowers, where they were formerly seen actively buzzing about in search of honey. The stores of the honey-cups have not outlasted the wants of the young unfledged bees, of which they were the proper food; and if the nests be examined now, these cups are found quite empty. The bees which survive the accidents of rain, cold, and frost (for they are now frequently overtaken by frosty nights in their languid journey homeward), by degrees forsake the nest and its furniture, leaving the latter as a prey to mice, beetles, or other animals. To shelter themselves for the winter, they seek out some dry bank (not preferring one exposed to the sun), where they penetrate to the depth of eighteen inches or two feet into the earth, pushing up the earth behind them, and leaving no visible track by which they have descended. In these situations they are often found by labourers and others in digging the earth; and such people are often greatly puzzled to imagine how the insect can have reached such a depth. Persons who have attended to the habits of wild bees, can often fix on the spots where they take refuge, digging for and finding them with the greatest certainty.

The experiment of domesticating the different kinds of wild bees, has been tried; and it was found, that by removing their nest cautiously in an evening, and placing it in a quiet situation, in a garden or other place where they could be observed, they went on with their works without apparent alarm or interruption. During the whole summer, they continued to prosecute their occupations with the same industry as other bees; but about September, as we have mentioned, the hive began to turn languid, and the numbers which appeared going and coming about the entrance became daily smaller. It was imagined they had taken refuge within the hive; but when this was opened, after all seemed to have ceased their labours, every thing was found empty and deserted; there were neither bees nor honey; the stronger and younger insects, no doubt, having gone to make burrows for themselves in the earth, and the older ones having gradually fallen victims to the accidents of approaching winter.

Many works have been written on the nature and habits of bees. Among those who have contributed largely to our knowledge of the subject may be mentioned, Swammerdam, Reumar, Schirach, Thorley, Wildman, Huish, Howison, Huber, and Bonner. The two latter made many valuable discoveries regarding the bee under very peculiar and, one would almost imagine, insurmountable disadvantages. Huber was stone blind, and Bonner's researches were conducted in the midst of a populous city, and during the pressure of daily toil,—he being a poor weaver, and his hives being kept for many years in a *garret* in the Gallowgate of Glasgow! Bonner's work on Bees was published at Edinburgh in 1795, (one volume, 8vo) and an English translation of Huber's was published in 1806, (12mo.)

BEGGEE JAN; a fanatical prince of Bucharia, in Tartary, who, towards the close of the last century, exercised a powerful sway over the Usbeck Tartars, by leading an ascetic and apparently devout life. More than fifty years ago, an almost supreme authority was exercised over the Usbecks of Bucharia by the Ameer Daniel, who had possessed himself of the person of the nominal prince. When this Ameer died he divided his wealth among his family, but declared his eldest son, Beggee Jan, to be his heir. This person had, however, for some time previously to the death of his father, clothed himself in the patched garment of a religious mendicant, and shut himself up in a mosque, that he might enjoy his devout meditations undisturbed. When his portion of the inheritance was brought to him, he refused to receive it, but directed it to be distributed among those who had suffered from the extortions of his father. He then clothed himself in the coarse dress of a supplicant for mercy, and hanging a sword around his neck, went through the streets of Bucharia, imploring, with tears in his eyes, the blessings and forgiveness of the inhabitants for his late father, for whose sins he begged that his own life might be taken in expiation. Beggee Jan was before this known to the learned as one deeply versed in theology, and as the writer of some esteemed treatises: but he had not, until this time, appeared before the people, who were much struck by his apparent humility and sanctity, and crowded around him as if he had been a prophet, joining with him in prayers for blessings upon the Ameer Daniel. Beggee Jan then returned to his retirement, and secluded himself from all but a few chosen disciples. Having professed himself one of those devotees who seek or have attained a state of mental blessedness and abstraction which leads them to despise all human pleasure and ambition, it was requisite that he should not easily be persuaded to assume that power which the people entreated him to undertake. They were wearied out by the contests among his relations for the power which he seemed to scorn, and crowds assembled daily about the mosque where he resided, and followed him wherever he went. It is said there were at that time several thousands of gambling and drinking-houses in Bucharia, and the first proof which Beggee Jan gave of his authority with the people was to destroy all these houses; and so generally was he reverenced, that even those who were ruined by the measure are said to have assisted in carrying it into effect.

Beggee Jan's own family suffered so much in the conflict for power, that its surviving members at last joined in the general request that he would assume the government. But he continued to refuse, until, upon occasion of a serious commotion in the capital, in which about a thousand lives were lost, the nominal king and all the nobles went to the mosque where he resided, compelled him to attend them to the tomb of his father, and at that sacred spot solemnly invoked him to save his country. Apparently overcome by their entreaties, he promised to give his counsel in the management of public affairs; but he continued to abstain from active interference, until a neighbouring chief, presuming upon the apparent weakness of the government, ventured to invade Bucharia. This so excited the indignation of Beggee Jan, that he accepted the title of Regent, and marched at the head of a large army against the invader, whom he compelled to retreat from the territories of Bucharia, and to abandon some of those countries, the possession of which he had at a former time usurped. From that time Beggee Jan became the actual ruler of the Usbecks, although he never bore any other title than that of Regent, and continued to pay a nominal obedience to Abdool Ghâzee Khan, the nominal king.

It may seem strange that Beggee Jan should have chosen this process of acquiring the power which he might probably have taken, without much difficulty, as the heir of his father. But he knew that merely as the head of a tribe he should, in a station to which he could have no distinct claim, be exposed to the jealousy and opposition of other chiefs; whilst, as a religious mendicant, compelled by his countrymen to assume regal power, he should have no rival to fear, and would be able to establish his authority on a permanent basis. Therefore in his subsequent life he never lost sight of that character in which he had won "golden opinions" from his countrymen. In his regulations for the management of public affairs, he gave to each institution a shape consonant to his apparent situation; and in his private character the temptations which surround a throne had no power to divert him from the practice of that austerity and self-denial which had sanctified his cell. His perseverance in this conduct disarmed his enemies and attached his friends; and ultimately he came to be regarded with such reverence, bordering on adoration, that he found little difficulty in establishing a fabric of power—by the consolidation of the Usbeck tribes, and by victories and successful negociations—which even Persia contemplated with great and just apprehension.

Beggee Jan abolished the splendid court at which the nobles of Bucharia had been accustomed to attend, and in its place established what may be called a hall of justice, in which he sat as president, assisted by forty mollahs, or learned men. All who had complaints to make came to this hall; but the prosecutor was never allowed to speak unless the accused were present. No person, whatever might be his rank, dared neglect a summons to attend this court, before which even a slave might cite his master. Beggee Jan was accustomed to listen very patiently to the statements of both parties, and in all cases not criminal he sent them away with the advice to endeavour to settle the matter amicably between themselves. If they did so, the cause terminated; but if not, he took notes, at their re-appearance, of the evidence produced; and these were given, together with his opinion on the case, to the mollahs, who were directed to prepare a decision according to the holy law. The parties, even after this, had a week allowed them to accommodate their difference; but if they failed to do so, sentence was then passed, and became irrevocable. Criminal justice was administered according to the Koran. Daring robbers were punished with death; petty thieves by the loss of their right hands; drunkards were publicly whipped. Tobacco having come into use since the time of Mahomet, the Koran says nothing about it; but smoking is rather discountenanced by severe religionists, and Beggee Jan forbade it under severe penalties. From all classes in the city of Bucharia the strictest attention to the forms of religion was required: police officers were continually employed in driving the inhabitants to the mosques to hear the stated prayers; and they were authorized to use their whips to awaken the devotion of the negligent. These officers had also authority to interrogate the persons they met as to their knowledge of the proper prayers, and to inflict summary punishment on such as were found wanting. Of these proceedings we cannot form a proper estimate without recollecting that an attention to the stated prayers is an essential duty of daily life, the observance of which is made imperative upon a Moslem by the Koran, the directions of which have the force of public laws in every Mohammedan country.

The nominal monarch, Abdool Ghazee Khan, and his family, were supported from the produce of the royal estates. But Beggee Jan drew daily from the same fund from which he paid his soldiers, for the support of himself, his cook, his servant, and his tutor, the sum of one *tungáh* (about five pence) for each, being the amount of the stipend allowed to the poorest student. The wife of Beggee Jan, who was one of the royal family, was allowed only three *tungáhs*. This princess had a fortune of her own, which placed her above the necessity of receiving this pittance; but she took it nevertheless, in order to please her husband, who often told her that it was too much. "That which is actually necessary," he used to say to her, "is alone lawful." and when she remonstrated, he was wont to add,—"Learn, lady, to be content with little, that thy God may be content with thee." Nevertheless the joy which he felt at the birth of a son induced him to abate the rigour of his domestic regulations. A sum of not less than £5 was allotted for the support of the mother and infant; and an equal amount was given for the support of two other sons the moment they were born. Gradually Beggee Jan showed his intention to educate his children in the enjoyment of the luxuries which, as for himself, he appeared to despise. He allowed his family to reside in a palace; while he himself occupied an unfurnished room, or rather cell, into which persons of all classes were admitted. He wore a coarse and filthy dress, while he was surrounded with splendour. On his death, his eldest son, Hyder Törah, ascended the throne of Bucharia, and assumed the dignity as well as the name of a sovereign. See Sir John Malcom's History of Persia.

BEGHERME; a considerable country of Central Africa, to the south-east of the lake Tchad. The people wage almost perpetual war with Bornou, which boasts of having subjected them; but they always find a retreat beyond a considerable river, which flows through their country, whence they return, and regain possession of their territory. Their chief force consists in mounted lancers, who, with their horses, are cased in iron mail.

BELFRAGE, HENRY, D. D., a much esteemed clergyman among the Scottish dissenters, was born on the 24th of March, 1774, at Falkirk, where his father was a minister of the Secession church. He was educated first at the grammar-school of his native town, and afterwards at the university of Edinburgh, to which he was removed in the thirteenth year of his age. His theological course commenced in 1789, and was pursued under the tuition of the Rev. John Brown of Haddington. Among those who attended the classes with him he formed many valuable friendships, which subsisted during life, and though in worldly circumstances, talents, and fame, he maintained a superiority over the most of those with whom he was thus connected, yet perhaps no friendships were ever more uninterrupted or more intimate. Soon after he was licensed to preach, he received calls from three congregations, and in the case of one of these, the proverb did not hold good that a prophet has no honour in his own country. He father's congregation gave him a most hearty invitation to be the colleague and successor of their venerable pastor. But it never ceased to be true of Dr Belfrage, that he was best liked by those who knew him best. He was his father's colleague for four years, a circumstance which must have been of advantage to the young divine; for he was only twenty years of age when he was ordained. During the forty-one years he lived in the discharge of the duties of the ministerial office, he was an example of all blamelessness and of many excellencies. His congregation was large, and scattered over a considerable extent of country, yet every year he visited ministerially every member of it, and also had regular *diets* of catechising. The sick were never forgotten by him, especially if they were poor. His advice, his prayers, his purse, were never withheld on any proper occasion. From his father he inherited the estate of Coliston, in Kinrosshire, and perhaps seldom was property in the possession of one more qualified by nature and habit to make a proper use of it. To all that concerned the intellectual, moral, and religious improvement, and the temporal interests of his fellow-men, both rich and poor, he was ever willing to contribute time, labour, or money, as might be required.

As an author, Dr Belfrage has acquired considerable celebrity among the religious community, both of England and Scotland. Indeed, his name is fully as familiar to the dissenters and orthodox churchmen of the former country, as it is in the latter. His Life of Dr Waugh of London has gone through a number of editions. Most of his other works (which in a collected form make twelve vols.) are altogether of a practical nature; yet his exposition of the shorter catechism shows him to have been a master in the school of dogmatic theology. His Sacramental Discourses were among the earlier of his publications, and they still continue to enjoy a great popularity. It was in delivering such discourses that he appeared to most advantage as a public speaker. In 1824, without any solicitation on his part, but through the interference of his distant relative, the late Rev. Sir Henry Moncrief, he received the degree of D.D. from the university of St Andrews. He died on the 16th of December, 1835. A memoir of him has since been published by the Rev. John M'Kerrow and the Rev. John M'Farlane.

BELGIUM (*a.*). The present king of the Belgians, formerly prince Leopold of Saxe-Coburg, was born 16th Dec. 1790. In May 2, 1816, he married Charlotte, daughter of George IV, then prince regent, who died in child-bed, Nov. 6, 1817. Leopold was elected king of the Belgians, June 4, 1831; took the oath to the constitution, July 21, 1831, and married, August 9, 1832, Louise, daughter of Louis Philippe, king of the French, by whom he has had Leopold Louis Philip Maria Victor, prince royal, born April 9, 1835, and Philip Ferdinand Eugene George, born March 24, 1837. The government is a constitutional hereditary monarchy. The legislature is composed of a senate and chamber of representatives or deputies. The number of deputies is apportioned to the population, and cannot exceed the proportion of one deputy to 45,000 inhabitants, and the number of senators is equal to half the number of deputies. The deputies are elected for four years, and the senators for eight years. The chambers assemble in their own right, every year, on the second Tuesday of November, unless convoked earlier by the king. Belgium has four universities, two of which, those of Ghent and Liege, are supported by the government. The ancient university of Louvain is suppressed; but a new Catholic university, lately founded with the sanction of the pope, has been established there. The free university of Brussels is founded by private individuals. The great mass of the inhabitants are Catholic, the number of Protestants being only from 15,000 to 20,000; but all religions are tolerated. The Catholics are under the charge of one archbishop and five bishops. The salaries are paid out of the public treasury. The following table exhibits the population, electors, representatives, and senators of Belgium in 1835, including the grand-duchy of Luxemburg.

Provinces.	Pop.	Electors.	Repres.	Senators.
Antwerp	353,963	4440	9	4
S. Brabant	566,809	5889	14	7
W. Flanders	516,904	6608	15	8
E. Flanders	747,569	9606	18	9
Hainault	676,942	6327	15	8
Liege	380,189	3726	9	5
Limburg	326,737	3359	9	4
Namur	220,332	2960	5	3
Luxemburg	316,504	4934	8	4
Total	4,154,922	47,853	102	51

The superficial extent of Belgium is about 12,000 English square miles. Its vast continuous plains are covered with the finest pasturage and the richest harvests, traversed by excellent roads and deep canals, and strewed with flourishing villages, towns, and cities. In the most westerly provinces, and on the banks of the Meuse, vineyards are abundantly sprinkled on the hill-sides, and refresh the eye, fatigued with the monotony of the green fields in the plains; presenting thus, at one view, the mingled character of the valley of the Rhone, and the richest cantons of Normandy. Belgium, however, is not solely agricultural; she possesses beds of coal and iron mines, the former superior to any on the European continent. In the basin of Mons, for instance, we find from a hundred and ten to a hundred and twenty strata, or layers of coal, disposed one above another, all workable, and all wrought. The four principal collieries of Mons, Marimont, Liege and Charleroi, yield annually 3,200,000 tons of coal. Nor is Belgian industry less striking as regards iron than it is with respect to coal. It is remarkable, that, to this day, no attempt for the fabrication of iron after the English fashion—that is, by extracting it from the iron-stone or ore—has succeeded in France, though many districts abound in natural advantages for the purpose. In Belgium, on the contrary, the undertaking has been accompanied with the most marked success. In 1830, some capitalists at Charleroi erected a furnace, where they treated the mineral of the district with the coal which likewise exists there. From that time till this, establishment has followed establishment so rapidly, that, in the district of Charleroi alone, there are, at this day, twenty-five coke-furnaces in action, producing annually 75,000 tons of metal, without reckoning furnaces where wood is employed. In 1834, the iron produce of all France, from the combustible mineral as in Belgium, amounted only to 47,000 tons; the French castings in the same year, of every kind, amounted in whole to 269,000 tons. So rich in iron and coal, Belgium could not fail to have flourishing manufactures; the woollen stuffs of Verviers, and the flaxen goods of Flanders, are familiar to the world.

The Belgians follow out their manufacturing and mining pursuits with boldness and energy. Six hundred feet was not long ago reckoned an extraordinary depth to push a mine down into the earth; recently, the Belgian miners have penetrated above thirteen hundred feet. The Belgians are busy raising structures for manufacturing industry, such as fabrics for the reception of furnaces, plating or boring machines, or forges. The establishment of Seraing, near Liege, extends, in regular buildings, for three quarters of an English mile. On the side opposite the Meuse are situated the mines, from which issue the mountains of coal, to be converted into coke. Next to these are the great round towers, sixty feet high, and fortified with iron, from the mouths of which flames are continually darted as from a crater. One of these furnaces has been in action for several years, and during that time there have been thrown into it, each day, nearly one hundred thousand killogrammes of materials. The numerous other buildings attached to this establishment are filled with steam-engines, forges, refining places, &c. Almost ere the manufactured iron be cold, it is delivered over to artisans, who make from it machines and tools of all possible kinds, and, above all, rails for railways. The whole neighbourhood of this establishment is traversed by railroads and canals. The workmen at Seraing are three thousand in number.

On the 1st of May 1834, a law to the following effect was promulgated by the Belgian government:—

"Article I. There will be established a system or chain of railways, having Malines for a centre point, and stretching to the eastward toward the Prussian frontier by Louvain, Liege, and Verviers —to the north as far as Antwerp—to the west as far as Ostend, by Termond, Ghent, and Bruges—and to the south by Brussels, and towards the frontiers of France through Hainault.

"2. The railways will be executed at the public charge, and under the direction of the government."

The line from Antwerp to Brussels is completed. The revenue derived from it has exceeded the highest expectations. It is supposed the eastern, western, and northern lines, the aggregate length of which is 222 English miles, will be finished at an expense of forty-five millions of francs, £1,875,000 sterling. The proportionate expense per mile must, of course, vary according to the difficulties or facilities of the ground. That portion of the line which extends between Brussels and Antwerp, a distance of thirty-three miles, passes over ground naturally level, and cost £4350 a mile. More inaccessible districts will cost much more than this; but it may be questioned whether any part of the Belgian railways will approach near to the expense of the line between Paris and St Germains, which is estimated at above £24,000 sterling per mile. The abundance of iron in Belgium renders all public works of this kind comparatively cheap. In addition to the 222 miles of railway first projected, nearly 100 miles additional have been subsequently resolved upon, in order to perfect the internal intercourse of the country.

The *farms in Belgium* very rarely exceed a 100 acres. The number containing fifty acres is not great. Those of thirty and twenty acres are more numerous, but the number of holdings of from five to ten, fifteen, and twenty acres is very considerable, especially those of the smaller extent. The small farms of Belgium closely resemble the small holdings in Ireland; but the small Irish cultivator exists in a state of miserable privation of the common comforts and conveniences of civilized life, whilst the Belgian peasant farmer enjoys a large portion of those comforts. The houses of the small cultivators in Belgium are generally substantially built and in good repair: they have commonly a sleeping-room in the attic, and closets for beds connected with the lower apartment, which is convenient in size. A small cellarage for the dairy, and store for the grain, as well as an oven, and an outhouse for the potatoes, with a roomy cattle-stall, piggery, and poultry-loft. The house generally contains decent furniture, the bedding sufficient in quantity; and although the scrupulous cleanliness of the Dutch may not be everywhere observable, an air of comfort and propriety pervades the whole establishment. In the cowhouse the cattle are supplied with straw for bedding. the dung and urine are carefully collected in the tank. the ditches are scoured to collect materials for manure; the dry leaves, potato-tops, &c. are collected in a moist ditch to undergo the process of fermentation, and heaps of compost are in course of preparation. The premises are kept in neat and compact order, and a scrupulous attention to a most rigid economy is everywhere apparent. The family are decently clad, none of them being ragged or slovenly, even when their dress consists of the coarsest material. The men universally wear the blouse, and wooden shoes are in common use by both sexes. The diet consists to a large extent of rye bread and milk; the dinner being usually composed of a mess of potatoes and onions, with the occasional addition of some pounded ham or slices of bacon.

The contrast of the mode of living here described, with the state of the same class of persons in Ireland, is striking; and it appears important to investigate the causes of this difference.

In the greater part of the flat country of Belgium the soil is light and sandy, and easily worked; but its productive powers are certainly inferior to the general soil of Ireland, and the climate does not appear to be superior. To the soil and the climate, therefore, the Belgian does not owe his superiority in comfort and position over the Irish cultivator. The difference is rather to be found in the system of cultivation pursued by the small farmers of Belgium, and in the habits of economy and forethought of the people. The cultivation of the small farms in Belgium differs from the Irish—1st, in the quantity of stall-fed stock which is kept, and by which a supply of manure is regularly secured; 2nd, in the strict attention paid to the collecting of manure, which is most skilfully managed; 3rd, by the adoption of a system of rotation of five, six, or seven successive crops, even on the smallest farms, which is in striking contrast with the plan of cropping and fallowing the land prevalent in Ireland. In the farms of six acres no plough, horse, or cart is required; the only agricultural implement, besides the spade, fork, and wheelbarrow, being a light wooden harrow, which might be dragged by hand. The farmer has no assistance beyond that of his wife and children, excepting sometimes in harvest, when he occasionally obtains the aid of a neighbour, or hires a labourer at a franc per day. The whole of the land is dug with the spade, and trenched very deep; but as the soil is light, the labour of digging is not great. The stock on a small farms consists generally of a couple of cows, a calf or two, one or two pigs, sometimes a goat or two, and some poultry. The cows are altogether stall-fed, on straw, turnips, clover, rye, vetches, carrots, potatoes, and a kind of soup made by boiling up potatoes, peas, beans, bran, cut hay, &c., into one mess, and which being given warm, is said to be very wholesome, and to promote the secretion of milk. In some districts the grains of the breweries and distilleries are used for the cattle.

The success of the Belgian farmer depends mainly upon the number of cattle which he can maintain by the produce of his land, the general lightness of the soil rendering the constant application of manure absolutely necessary to the production of a crop. The attention of the cultivator is always therefore especially directed to obtain a supply of manure. Some small farmers, with this view, agree with a sheep-dealer to find stall-room and straw for his sheep, to attend to them, and to furnish fodder at the market price, on condition of retaining the dung. The small farmer collects in his stable, in a fosse lined with brick, the dung and urine of his cattle. He buys sufficient lime to mingle with the scourings of his ditches, and with the decayed leaves, potato-tops, &c., which he is careful to collect in order to enrich his compost, which is dug over two or three times in the course of the winter. No portion of the farm is allowed to lie fallow, but it is divided into six or seven small plots, on each of which a system of rotation is adopted; and thus, with the aid of manure, the powers of the soil are maintained unexhausted, in a state of constant activity. The order of succession in the crops is various; but plots are appropriated to potatoes, wheat, barley, clover (which had been sown with the preceding year's barley), flax, rye, carrots, turnips or parsnips, vetches, and rye for immediate use as green food for the cattle. The flax grown is heckled and spun by the farmer's wife, chiefly during the winter, and about three weeks' labour at the loom towards the spring weaves into cloth all the thread thus prepared. The weavers are generally a distinct class from the small farmers, though the labourers chiefly supported by the loom commonly occupy about an acre of land, sometimes more, their labour upon the land alternating with their work at the loom. In some districts, every gradation in the extent of occupancy, from a quarter or half an acre, to the six-acre farm, is to be found; and in such cases more work is done in the loom by the smaller occupiers.

The labour of the field, the management of the cattle, the preparation of manure, the regulating the rotation of crops, and the necessity of carrying a certain portion of the produce to market, call for the constant exercise of industry, skill, and foresight among the Belgian peasant farmers; and to these qualities they add a rigid economy, habitual sobriety, and a contented spirit, which finds its chief gratification beneath the domestic roof, from which the father of the family rarely wanders in search of excitement abroad. There is no tendency to the subdivision of the small holdings. The prudent habits of the farmers enable them to maintain a high standard of comfort, and is necessarily opposed to such subdivision. Their marriages are not contracted so early as in Ireland, and the consequent struggle for subsistence among their offspring does not exist. The proprietors of the soil retain the free and unrestricted disposal of their property, whether divided into smaller or larger holdings. The common rent of land is about 20s. an acre, and the usual rate of wages for a day labourer is a franc (or 10d.) a day. See "Third Report of George Nichols, Esq. containing the Result of an Inquiry into the condition of the labouring classes in Holland and Belgium."

BELL, ANDREW, D. D. LL. D., prebendary of Westminster, master of Sherborn hospital, Durham, fellow of the Asiatic Society and the Royal Society of Edinburgh; the founder of the Madras system of education, was born at St Andrew's in the year 1753, and was educated in the university of that place. The whole of the early part of his life (a portion of which was spent in America,) was distinguished by the exemplary manner in which he fulfilled every public and private duty. In the year 1789, after his appointment as chaplain to Fort St George, and minister of St Mary's, at Madras, the splendid qualities of his mind were first developed. Since that period, he has been regarded as one of the greatest benefactors of mankind. He undertook the gratuitous superintendence of the Military Male Orphan Asylum, at that station, until 1796, during which time he founded the Madras system of elementary education; and although the rival claims of Mr Lancaster then came into notice, it is but justice to add, that the universal judgment of the country, and the testimony of authentic documents, pronounced the merit of the discovery to have been solely and exclusively due to Dr Bell. No sooner were the advantages of the system known, than it was patronised by the government of Fort St George; and on the Rev. Doctor's arrival in this country in 1797, the original report was immediately published, and submitted to the highest authorities in church and state, by whom the system was patronised, and found to work so well in practice that it has since been adopted in every civilised nation in the world. In Great Britain alone there are, at the present time, "ten thousand schools, without any legislative assistance, wherein six hundred thousand children are educated by voluntary aid and charity." The most gratifying testimonials were transmitted to the Doctor in proof of the excellence of his plan, not only from the highest quarters in this country, but from several governments and learned bodies in Europe, Asia, and America; while the improvement in the morality, civilization, and piety of the lower classes, during the present and future generations, will have acquired its chief impulse from the labours of Dr Bell. The evening of his pious and useful life was passed in Cheltenham, where his benevolence and the practice of every social and domestic virtue had gained him the affection and respect of every class of the community. His death took place there, Jan. 27, 1832. He distributed no less a sum than £120,000 to various national institutions and public charities. To his native city of St Andrews, he left £10,000, besides a sum of £50,000, for building and endowing a new college there. Many valuable works on education were written by him, amongst which "The Elements of Tuition," "The English School," and "Brief Manual of Mutual Instruction and Moral Discipline," will ever occupy a distinguished place in our useful national literature.

The committee of the national society for the education of the poor, passed the following resolution at its first meeting after Dr Bell's decease:

"Resolved—That the committee, having learned that it has pleased Almighty God to remove from this present life the Reverend Dr Bell, the superintendent of the society's schools, deem it incumbent upon them to pay a public mark of respect to the memory of a man who may justly be regarded as the founder of a system of education which, under the Divine blessing, has been productive of incalculable benefits to this church and nation; and that, as it is understood that his remains are to be interred in Westminster Abbey, the secretary be directed to ascertain the day fixed for his interment, and communicate the same to the committee for the information of such members as may find it convenient to attend."

The remains of Dr Bell arrived in London from Cheltenham on the 11th of February. Having remained for three days at No. 18, Berkeley Square, they were deposited in Westminster Abbey on the 14th, the funeral procession, consisting of ten mourning-coaches, and twenty-six private carriages, among which were those of the archbishop of Canterbury, the earls of Shaftesbury, Eldon, and Amherst; the bishops of Lichfield and Coventry, Bristol, Chichester, and Llandaff; lords Kenyon and Wynford; the hon. Mr Justice Park; Sir James Langham; the Rev. archdeacons Cambridge, Watson, &c.

BELL, JOHN, an eminent English lawyer, was a native of Cumberland. He was educated at Trinity college, Cambridge, where he became fellow; he was the senior wrangler and first Smith's prizeman of the year 1786, and proceeded M.A. in 1789. He was called to the bar by the hon. society of Gray's Inn, Feb. 1, 1792, and was nominated a King's counsel in Easter Term 1816. For many years he was the most distinguished ornament of the Chancery bar, and held the highest rank in his profession for profound learning and eminent acuteness. He was a Whig in politics, but never courted or received any favour at the hands of his party. He retained throughout his whole professional career his native Cumberland dialect in all its unalloyed and broad provincialism; and, in addition to the disadvantages arising from that circumstance, he had to contend with some physical defect in his utterance, speaking with great hesitation, repeating his words and stuttering in such a manner that it was really painful to listen to him. The proceedings in the Chancery courts are, as our readers are generally aware, carried on in a very quiet conversation-like manner. The advocate seldom aims at eloquence. To tell a plain tale in a plain manner is all that is attempted. Even that was beyond the power of John Bell. And yet, with all these defects, such was the reputation he acquired for sound discretion and solidity of judgment, that he managed to maintain a very high rank at the English bar at a time when it was adorned by such men as Sir Samuel Romilly, Sir William Grant, and Sir John Leach. Probably there never was a more extraordinary instance of superiority of intellect making itself known and appreciated, in spite of obstacles which would generally be thought, and indeed be found altogether invincible, than the one exhibited by Mr Bell.

George the Fourth, while prince regent, is related to have asked the lord chancellor (Eldon), Who was considered at that time the greatest lawyer?—to which the chancellor is reported to have replied, "Please your royal highness, the greatest lawyer we have at this time is a gentleman who can neither read, write, walk, nor talk." And if the words are to be understood with reference to doing any one of these things *well*, they are true to the very letter.

He laboured from his infancy under a distortion of one of his feet, which made walking a painful operation. Another singularity attached to him was, the extraordinary illegibleness of his handwriting; so that, though his opinions were more sought for than those of any man of his time, it frequently happened that his clients were obliged to resort to himself or his clerk to decypher them. In reference to this defect he used facetiously to say, when asked what sort of a hand he thought he really wrote, that he had three sorts—one that he himself could read—one that his clerk could read, —and one that neither he nor his clerk could read. It certainly was most extraordinary writing—paralleled only by the late Dr Parr's hieroglyphics.

Out of court he was a very good-tempered and affable man, easily accessible, painstaking, and laborious; in court he very frequently obtained advantage over more brilliant and showy opponents by the exactness with which he was accustomed to make himself acquainted with the facts of his cases, and his skill in bringing forward analogous cases which had been previously decided. The application of cases was indeed his great *forte*, and in that respect, perhaps, no man was ever more skilful.

In person he was a little man, stout, and round-shouldered; with a very prominent mouth and large teeth.

Mr Bell retired many years ago from the Chancery bar, but he lent his aid to the Chancery law commissioners. He died on the 6th Feb. 1836. He is supposed to have acquired a princely fortune by his professional labours, which devolves upon a widow and only son. His will was proved at Doctors' Commons, and the personalty sworn under £80,000.

BELPER; a market-town in Derbyshire, situated in a valley through which flows the river Derwent, 134 miles N. N. W. from London, and 54 S. E. from Manchester. Till the year 1776, Belper was an inconsiderable village, inhabited principally by nailers, whose articles are still in considerable demand from the superior quality of the rod-iron made at Alderwasley, four miles distant, which is supposed to arise from something peculiar in the nature of the coal used there. The town has risen into importance since the establishment of the cotton-mills of Messrs Strutt. These are now several in number, besides which, there are a bleaching-mill and a manufactory of machinery connected with the works of Messrs Strutt. Upwards of four thousand persons, chiefly residing in the neighbouring village, receive employment here in a factory for silk and cotton hose, said to be one of the largest establishments of the kind in the kingdom. The North Midland railway passes this town; the Cromford canal passes within two miles, and the High Peak railway within six. Saturday is market-day, and fairs for horned cattle, sheep, and horses are held on May 12th and Oct. 31st. At the north end of the town a stone bridge of three arches bestrides the Derwent, near which is a beautiful wear for working the mills of Messrs Strutt. A new church and several dissenting places of worship have been built in the town within the last twenty years. Population in 1831, 7890.

BELTURBET; a market-town in the county of Cavan, province of Ulster, Ireland, situated on the river Erne, on the road from Cavan to Ballyconnell, 67 miles N. W. from Dublin. The town is irregularly built. A very extensive distillery was erected here in 1825, by Messrs Dickson, Dunlop, and Co., which employs a number of persons. There are also some malting establishments. A troop of cavalry is generally stationed here. Market-day, Thursday. Population 2026.

BENSLEY, Thomas, an eminent English printer, was the son of a printer in the neigbourhood of the Strand, where Mr Bensley was first established; but he afterwards removed to Bolt Court, Fleet Street, where he succeeded Mr Edward Allen, the "dear friend" of Dr Johnson, who died in 1780. Mr Allen's office was next door to Dr Johnson's dwelling-house, which ultimately became part of Mr Bensley's printing office. Mr Bensley's skill as a practical printer was not inferior to that of his great contemporary Mr Bulmer. Whilst Mr Bulmer astonished the public with his magnificent edition of Boydell's Shakespeare, Mr Bensley produced a rival production in Macklin's Bible. To use the words of Dr Dibdin: "While the Shakespeare Gallery and the Shakespeare press were laying such fast hold of the tongues and the purses of the public, a noble spirit of rivalry was evinced by the Macklins of Fleet-street; Reynolds, West, Opie, Fuseli, Northcote, Hamilton, and others, were engaged to exercise their magic pencils in the decoration of what was called the *Poet's Gallery*; and among other specimens of this national splendour and patriotism came forth an edition of Thomson's Seasons in 1797, in royal folio, from the press of Mr Bensley, a volume quite worthy of the warmest eulogies. It had also the merit of not being debased by second-rate engravings. Meanwhile the pencil of Loutherbourg was called into requisition to supply, in particular, head and tail *pieces*, or vignettes, for the sumptuous edition of the Bible; and that sacred book, in seven broad folio tomes, came regularly before the public, with every fascination of which a bold type (cast by Joseph Jackson), raven-glossy ink, and Whatman's manufactured paper, could bestow upon it." The Bible of Macklin wanted, however, the Apocrypha; and about 1815 this desideratum was supplied, in the same manner, from the same press, at the expense of Messrs Cadell and Davies, but the passion for such splendid publications had evidently passed away, as Messrs Cadell and Davies experienced to their great loss. Dr Dibdin thus continues: "Hume's History of England followed hard upon the Bible, in ten volumes of a folio form, of better proportion. The engravings which adorn this magnificent work were executed from the paintings in the fore-mentioned Gallery; and upon the whole I am not sure (probably from the uniform appearance of the solid body of the text, compared with the same in the Bible, divided into columns and broken into verses,) whether this latter work has not greater admirers than its predecessor. The medallic and emblematical engravings [illegible], many of them, quite admirable." Among other splendid works printed by Mr Bensley may be enumerated the following, in nearly a chronological order, as particularly deserving of commendation on account of the beauty of their execution:—Lavater's Physiognomy, 5 vols. 4to. 1789. The Gentle Shepherd and Allan Ramsay, in English and Scotch, 8vo. 1790. Salmagundi, by Mr Hudesford, 4to. 1791. Wyntown's Originale Cronykil of Scotland, 8vo. 1795. The Gardeners, translated from De Lille, 4to. 1798. The Sovereign, a Poem; addressed to his Imperial Majesty of all the Russias, by Charles Small Pybus, Esq., with the author's portrait prefixed. The hero of this poem, as immediately afterwards appeared, was most unfortunately chosen. It is erroneously attributed by Dr Dibdin to Sir James Bland Burgess. He says of it: "If the Emperor Paul had afterwards 'cut as good a figure' as this beautifully printed book will always continue to do, he might have been master of all the Russias. Mr Bensley has probably never gone beyond this volume in his typographical achievements." Enchanted Plants, tables in verse, 8vo. 1800. Dulau's Virgil, 8vo. 2 vols. Festival of the Rose, 4to. 1802. Astle's Origin of Writing, 4to. 1803. Hume's History of England, 1803, 10 vols. Shakspeare, 7 vols. 1803. The Shipwreck, 1804; published by Mr Miller. An edition of Junius, 1804, 2 vols. Du Roveray's edition of Pope's Works, and Pope's Homer's Iliad, 1805. Smith's Antiquities of Westminster, 1807, 4to. On the 5th of November 1807, a fire broke out in Mr Bensley's warehouses, supposed to have been occasioned by boys letting off fire-works, which destroyed 700 copies of Mr Smith's Westminster, a splendid 4to edition of Thomson's Seasons, a fine edition of Juvenal, another of Pope's Works, many copies of Edwards's Guide to Brighton, and other works. But as the printing office was not much injured, Mr Bensley's labours at the press were not materially impeded.*

The next works we shall notice are Religious Emblems, 1809, 4to.; Riddell's History of Mountains, 1809, 4to. 3 vols.; Dallaway's Sussex, 4to. 1815 and 1819; Singer's History of Playing Cards, &c. 1816, 4to.; and Fairfax's Tasso, 1817, 8vo. Dr Dibdin notices, with high commendation, many of the peculiarities of each of the above splendid productions. See *Bibliographical Decameron*, vol. ii. pp. 397—401, and closes his account with a very correct portrait of Mr Bensley.

It would have been well for Mr Bensley's peace of mind if he had confined his attention to his old presses, and to *fine* printing, in which he so much excelled. But, in an evil hour, he was induced to embark his fortune in the establishment of the *Printing Machine* invented by Mr Kœnig, (which was first used in this country in printing the Times newspaper, on the 29th of November 1814.) Mr Bensley adapted the machine to the printing of books; and after great toil, much trouble, and very heavy expenses, Mr Bensley succeeded in printing both sides of the sheet by the same operation. But he had scarcely brought his exertions to a successful issue, before a second unfortunate and very rapid fire, June 26, 1819, again destroyed his warehouses and printing office, with their valuable contents. The elaborate machinery for steam-printing was, however, not materially injured, and the printing office was soon rebuilt. But the cumbrous machine, on which so much had been expended, was in a great measure superseded by later and simpler inventions by Mr Applegath and others; and after a time Mr Bensley parted with this printing office in Bolt Court, and retired from steam printing; and although he afterwards connected himself with a minor establishment in Crane Court, Fleet Street, resided chiefly at Clapham Rise, where he died on the 11th Sept. 1835.

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* On the subsequent repair and enlargement of Mr Bensley's premises, the interior of the residence of Dr Johnson was taken into them; but the front remained unaltered. It is engraved in the European Magazine for May 1810-11; and more elegantly in the "Graphic Illustrations of the Life and Times of Dr Johnson," just published by Mr Murray. Bishop Jebb, writing to A. Knox, Esq., June 10, 1815, says "I was t'other evening in Sam Johnson's house, in the apartment where he breathed his last, in Bolt Court—You may judge with what reverence! The premises are now partly bare rooms, partly a printing office in the occupation of Mr Bensley, forming but a minute part of his vast concerns. I could not help comparing the palace of the printer with the humble dwelling of the sage; and then asking myself how poor a thing is pelf! how unworthy of our care and competition!" At a subsequent period, June, 1819, this house was totally destroyed.

BENTHAM, JEREMY (*a*), was the eldest son of Mr Jeremiah Bentham, attorney; and was born at his father's house, in Red Lion Street, Houndsditch, adjacent to Aldgate church, February 15th (old style) 1747–8. His grandfather, who had followed the same profession, and had occupied the same two houses in the city and at Barking, was clerk to the company of scriveners. The name of Jeremy was derived from an ancestor, Sir Jeremy Snow, a banker in the reign of Charles II. The late General Sir Samuel Bentham, of the Russian service, who died April 30, 1831, was his brother. His father married, secondly, Sarah, widow of the Rev. John Abbot, D. D., Rector of All Saints, Colchester, and mother of the late Lord Colchester. She died September 27, 1809, and was buried in Westminster Abbey. About the year 1765, Mr Jeremiah Bentham purchased the house in Queen's Square Place, Westminster, where he and his son both passed the remainder of their lives. It had previously been the residence of the notorious courtesan, Theresa Constantia Philips, author of "Memoirs," in 3 vols. 1761.

Mr Bentham's talents developed themselves early. Soon after he was three years of age he read Rapin's History of England as an amusement; and at seven he read Télémaque in French. At eight he played the violin,—an instrument on which, at a subsequent period of his life, he became remarkably proficient. He was very distinguished at Westminster School. During one of the vacations, he read Helvetius's celebrated work on the Mind; from which he first obtained a glimpse of that principle, which at a subsequent period he so powerfully developed. At the age of thirteen he was admitted a member of Queen's College, Oxford, where he at once engaged in public disputations in the common hall, and excited, by the acuteness of his observations, the precision of his terms, and the logical correctness of his inductions, the surprise and admiration of all who heard him. At the age of sixteen he took his degree of A. B., and at the age of twenty that of A. M., being the youngest graduate that had at that time been known at either of the Universities. He afterwards entered at Lincoln's Inn, of which society he became a bencher in 1817.

From early childhood, such was the contemplative turn of his mind, and the clearness and accuracy with which he observed whatever came under his notice, that at the age of five years he had already acquired the name of "the Philosopher," being familiarly called so by the members of his family; and such, even in his youth, were the indications of that benevolence to which his manhood and his old age were consecrated, that a celebrated statesman, who at that period had conceived an affection for him, and with whom he spent much of his time after he was called to the bar, speaks of him, in a letter to his father, in these remarkable words:—"His disinterestedness, and his originality of character, refresh me as much as the country air does a London physician."

Many incidents of his early life mark the extent of his connection with the last century. He was accustomed to relate with great pleasure, that, when he was a boy, he was taken to drink tea with Hogarth, whose works he greatly admired. He was one of the class who attended the lectures of Sir William Blackstone, when they were delivered at Oxford; and young as the mind of Bentham was, it even then revolted at the reasoning of the professor. As a law student, he took notes of the speeches of Mansfield; and he was a member of the club ruled by Johnson, whom he never liked, considering him to be a gloomy misanthropist.

Mr Bentham entered upon his profession with a prospect amounting almost to a certainty of the highest success. His father's practice and influence as a solicitor were considerable, and his (the son's) draughts of bills in equity were at once distinguished for their superior execution. In one of his pamphlets ("Indications respecting Lord Eldon") Mr Bentham thus notices the circumstances which led to his retirement from the bar:—

"By the command of a father, I entered into the profession, and, in the year 1772, or thereabouts, was called to the bar. Not long after, having drawn a bill in equity, I had to defend it against exceptions before a master in chancery. 'We shall have to attend on such a day,' said the solicitor to me, naming a day a week or so distant; 'warrants for our attendance will be taken out for two intervening days; but it is not customary to attend before the third.' What I learnt afterward was—that though no attendance more than *one* was ever bestowed, *three* were on every occasion regularly charged for; for each of the two falsely pretended attendances, the client being by the solicitor charged with a fee for himself, as also with a fee of 6s. 8d. paid by him to the master. The consequence was—that for every attendance, the master, instead of 6s. 8d., received £1; and that, even if inclined, no solicitor durst omit taking out the three warrants instead of one, for fear of the not-to be-hazarded displeasure of that subordinate judge and his superiors. True it is, the solicitor is not under any *obligation* thus to charge his client for work not done. He is however, sure of *indemnity* in doing so: it is accordingly done of course. * * * * These things, and others of the same complexion, in such immense abundance, determined me to quit the profession; and, as soon as I could obtain my father's permission, I did so: I found it more to my taste to endeavour, as I have been doing ever since, to put an end to them, than to profit by them."

Between Mr Bentham's coming of age, and the commencement of the French Revolution—a period of nearly twenty years—he was thrice on the continent, and every time resided chiefly in Paris. In his second visit to the Gallic capital, he formed an acquaintance with the celebrated but unfortunate Brissot, then better known by the name of Warville.

There were several strong points of resemblance between Brissot and Bentham, which will account for the warmth of their friendship; added to which, the aspect of the times gave occasion, first to a correspondence, and afterwards to a rendezvous with each other, which tended much to strengthen mutual attachment. It is well known that some few years before the French Revolution, Brissot fixed his abode in London, in prosecution of a design of conducting a periodical, entitled "A Universal Correspondence on Points interesting to the Welfare of Man and of Society." London was chosen as the centre, where information was to be collected from all points, and from which he could diffuse it in all directions through the medium of his publication. In this way, Brissot thought it possible to evade the restriction upon the press in France, and to illuminate that country by means of the more elastic press of England. The design, however, failed; and the cost of the experiment subjected Brissot to an arrest in London, from which he was freed by the generosity of a friend, generally supposed to be Mr Bentham. When Brissot returned to Paris, and rose into popularity, he testified his gratitude to Mr Bentham, by nominating him, without his consent or knowledge, a member of the second national assembly.

Between the years 1784 and 1788, Mr Bentham took an extensive European tour. Leaving France by way of Montpellier, Marseilles, and Antibes, he sailed to Genoa, and thence to Leghorn. From Leghorn he passed with letters of introduction to Florence, and spent several days in the hospitable mansion of the late Sir Horace Mann, who had been for some years the British envoy in that city. From Leghorn he resolved upon a passage to Smyrna, in a vessel owned and commanded by a captain with whom he had previously formed an intimate friendship in London. In the voyage, a storm drove the ship into a narrow strait, near the island of Mitelene, where she passed the night, and where, in the morning, he obtained a full view of the beautiful but ill-fated isle of Scio. Mr Bentham stayed three weeks at Smyrna, and thence proceeded in a Turkish ship to Constantinople, where he remained about double that time. His ultimate destination was Crechoff, in Russia, where his brother, Sir Samuel Bentham, was quartered as commandant of an independent battalion of a thousand men, and in which neighbourhood was the estate of the prime minister of Russia, Prince Potemkin. Mr Bentham reached his brother's house in the beginning of the year 1786; but, unfortunately, the latter was on an excursion to Cherson, where he was detained for the defence of the country against the threatened invasion of the Capitan Pacha. With characteristic industry, Mr Bentham sat down in his absent brother's study, and wrote his "Letters on the Usury Laws." There, also, he wrote the first portion of his "Panopticon." After above three years' absence he returned home, through Poland, Germany, and the United Provinces, in February, 1788.

The death of his father, in 1792, left Mr Bentham with a moderate fortune, and the free choice of his course of life; when he wholly abandoned all prospect of professional emoluments and honours, and devoted himself entirely to the composition of his laborious and valuable works.

Availing himself of the truce of Amiens, Mr Bentham again visited Paris, in 1802, accompanied by Sir Samuel Romilly. At that very time M. Dumont was publishing Mr Bentham's works in French. This circumstance considerably aided the purpose of his Parisian friends in electing him a member of the French institute, to which he was eligible in consequence of the citizenship of France having previously been conferred upon him. When it is remembered that only three vacancies existed, and that one was reserved for the nomination of Bonaparte, then first consul of France, Mr Bentham's election must be considered as no slight proof of the estimation in which he was held by the savans of Paris. Nor were the circumstances which attended his last visit to the French capital, in 1825, when he went for the benefit of his health, less flattering. He was received with the greatest enthusiasm; and on casually visiting one of the supreme courts, the whole body of the advocates rose and paid him the highest marks of respect, and the court invited him to the seat of honour.

The qualities which, in youth, formed the charm of Mr Bentham's character, and which grew with his growth and strengthened with his strength, were truth and simplicity. Truth was deeply founded in his nature as a principle; it was devotedly pursued in his life as an object; it exercised, as we have seen, even in early life, an extraordinary influence over the operations of his mind and the affections of his heart; and it was the source of that moral boldness, energy, and consistency, for which, from the period of manhood to the close of life, he was so distinguished. There was nothing in the entire range of physical, moral, or legislative science; nothing whatever relating to any class of subjects that could be presented to his understanding; nothing, however difficult other men thought it, or pretended to think it, or with whatever superstitious, political, or religious reverence and awe they regarded, or affected to regard it; which he did not approach without fear; to the very bottom of which he did not endeavour to penetrate; the mystery regarding which he did not strive to clear away; the real, the whole truth of which, he did not aim to bring to light. Nor was there any consideration, whether of a personal nature or not, that could induce him to conceal any conclusion at which he had arrived, and of the correctness of which he was satisfied: even though, by the desertion of friends and the clamour of foes, the very cause he advocated might to some have appeared to be endangered by his so doing. It was not possible to apply his principle to all the points and bearings of all the subjects included in the difficult and contested field of legislation, government, and morals; to apply it as he applied it, acutely, searchingly, profoundly, unflinchingly, without consequences at first view startling, if not appalling, even to strong minds and stout hearts. They startled not, they appalled not him, mind or heart. He had confidence in his guide; he was satisfied that he might go with unfaltering step wherever it led; and with unfaltering step he did go wherever it led. Hence his singleness of purpose; hence, in all his voluminous writings, in all the multiplicity of subjects which have come under his investigation, as well those which he has exhausted, as those which he has merely touched; as well those which are uncomplicated by sinister interests and the prejudices which grow out of them, as those which are associated with innumerable false judgments and wrong affections: hence, in regard to not one of them does a single case occur in which he has swerved from his principle, or faltered, or so much as shown the slightest indication of faltering, in the application of it.

He was capable of great severity and continuity of mental labour. For upwards of half a century he devoted seldom less than eight, often ten, and occasionally twelve hours of every day, to intense study. This was the more remarkable, as his physical constitution was by no means strong. His health, during the periods of childhood, youth, and adolescence, was infirm; it was not until the age of manhood that it acquired some degree of vigour: but that vigour increased with advancing age; so that during the space of sixty years he never laboured under any serious malady, and rarely suffered even from slight indisposition; at the age of eighty-four he looked no older, and constitutionally was not older, than most men are at sixty; thus adding another illustrious name to the splendid catalogue which establishes the fact, that severe and constant mental labour is not incompatible with health and longevity, but conducive to both, provided the mind be unanxious and the habits temperate.

Mr Bentham's death took place at his house in Queen's Square Place, Westminster, on the 6th of June, 1832. He was in the eighty-fifth year of his age.

Mr Bentham's body was in consequence of his own earnest desire, transferred to the Webb street school of anatomy and medicine; at which place Dr Southwood Smith delivered an admirable lecture over it, on the 9th of June, 1832. A collected edition of his works has been published by Dr Bowring.

BERNADOTTE. [Although Charles XIV., king of Sweden, has not yet (1839) paid the debt of nature, we are still induced to give here, under his family name, a sketch of his remarkable life, as reference has been made to it in the body of the work, and as, independently of that, his career may be considered, at his great age, as, in effect, closed, so far as the purposes of history are concerned.]

Jean Baptiste Julien Bernadotte was born at Pau, in the south of France, on the 26th of January 1763. His father was a lawyer, and it was his desire to have brought up his son in the same business; but the young man, when only fifteen years of age, forsook the paternal care and roof, and enlisted as a private in the regiment of royal marines. During the war which followed between Great Britain and France, on account of the support granted by the latter to the revolt of the American colonies, Bernadotte served in the East Indies; and at so tender an age had he learnt to distinguish himself, that, a year after his enlistment, he was made a corporal, and upon the return of his corps to France in 1783, he was promoted to the rank of sergeant. He remained in this position until 1789, when a very daring and magnanimous act raised him at once in rank and in general estimation. In that year the royal marines were stationed at Marseilles, where, it is well known, the revolutionary spirit ran to a great height in the very earliest periods of the disturbances in France. The mob of the town having risen tumultuously, and drawn into the movement most of the soldiers stationed there, with loud shouts expressed their determination to take the life of the Marquis d'Ambert, colonel of the royal marines, to whose house they directed their steps. Bernadotte attempted to arrest their progress by an exhortation to humanity and forbearance, but such an appeal, in their phrensied state, was quite unavailing, and they compelled Bernadotte himself to join them, proclaiming that they had nominated him colonel of the marines in place of their intended victim. But the determined serjeant was not to be won by so brilliant an offer and having drawn off a few of his own men, whom he recalled to a sense of their duty, he suddenly planted himself between the mob and the marquis's house, and thus addressed them: "People of Marseilles, as you express confidence in me, I will show you I deserve it. I will not allow you to dishonour yourselves by a base assassination. If the colonel be guilty, the law is the executioner, not citizens and soldiers. I request you, then, to retire, as, before you obtain the head of the colonel, you must deprive me, and the brave men who surround me, of ours!" This manly declaration caused the infuriated mob to pause, and, seeing the firm resolution of the young serjeant, ultimately to desist from their purpose.

After this period, Bernadotte for a short time quitted the army for a civil post. He was appointed clerk to the parliament of Pau, his native town, and, upon the establishment of the national guards, he became adjutant of those of Pau. Even in this provincial sphere, he had opportunities of evincing his courage and talents, and spreading the reputation of his name, for, in 1793, he received the coloneley of the 72d regiment of the line, which was attached to the army of the North, under the command of General Kleber. In the campaign which ensued, his military conduct was the theme of approbation to his commanding officer, and his promotion was in consequence both great and rapid. Before the end of 1795, he was a general of division, and had successfully effected several important enterprises against the Austrians, with whom the French republic was at that time at war. In the following year, Moreau commanded the French army against the Archduke Charles, and General Bernadotte was placed in the division of Jourdan, and had in many instances a command in which he had entirely to rely upon his own resources. In proportion to the opportunities he enjoyed of distinguishing himself, his name became celebrated, and in this year, 1796, the Directory bore a very convincing evidence of the high estimation in which his capacity was held, by refusing to receive his resignation of his command, which he, in consequence of some charges of extortion made against him at Nuremburg, pressed upon their acceptance.

From this period, the name of Bernadotte is placed more or less in connection with that of Napoleon Bonaparte. In 1797, he had a division of fifteen thousand men in the army of Italy. The want of money was the universal complaint of the early republican armies of France, and great complaints were usual amongst the soldiers for arrears of pay. At Milan, the spirit of mutiny broke out in open violence, and in a positive refusal to proceed. Bernadotte, perceiving that expostulation was of no avail, assumed at once the tone of stern command. "Soldiers!" said he, "if you refuse obedience to my command, I am authorised by the military code to kill every man who does not march against the enemy, and either you shall have the ignominy of assassinating your general, or I will run my sword through the body of every mutineer." Upon pronouncing this resolution, he marched to the head of the 90th regiment, and, pointing his sword to the breast of the first grenadier, he ordered him to wheel to the right, unless he preferred to be run through the body. The soldier obeyed; the army followed in regular order, and the mutiny was effectually suppressed.

When the successes of the French army had induced the Austrian emperor to sue for peace, and the preliminaries of an accommodation had been signed in October 1797, Bernadotte was quartered at Treviso with his division, when he received the appointment from the directory of ambassador at Vienna. He accepted this embassy, and was received at the imperial court with every mark of distinction. An unfortunate event, however, soon put an end to his diplomatic mission. On the occasion of a public festival, he outraged the feelings of the people by hoisting the tri-coloured flag, and was near falling a victim to their vengeance. As the directory did not take up the case with the ardour he had anticipated, he threw up the embassy, and retired with disgust to Paris. The directory offered him in consolation a command of one of the interior provinces of France, which he indignantly declined. At a subsequent period the embassy to Holland was proffered him; but in his letter to the directory, he expressed the repugnance he felt for all diplomatic concerns, and it was not until 1799 that he again took an employment, when the command in chief of the army of observation was conferred upon him, and he afterwards went into active service at the head of the army of the Lower Rhine, under the superior command of General Jourdan. Reverses were now crowding thick upon the arms of France, owing principally to the unskilful management of affairs at home by the directory. With the view of giving a fresh impetus to the war department, Bernadotte was recalled from the army, and placed at its head. During his short administration, the most vigorous measures for supplying the armies were taken, but mutual disgusts and suspicions sprung up between him and the directory, and he once more retired from office. He took shelter in a small house in the Faubourg du Mousseaux, and gave himself up to domestic enjoyments. In August 1798, he had married Mademoiselle Clary, sister to the wife of Joseph Bonaparte, with which latter personage this connection drew closer his previous bonds of friendship.

The occurrences of the 18th Brumaire, which unseated the directory, and placed Bonaparte at the head of affairs as first consul, met with neither decided opposition nor participation on the part of Bernadotte; and if he disapproved of the proceedings of Bonaparte, and offered his services to the directory to oppose his attempt, as the more ardent admirers of Bernadotte allege, it is at all events certain, that, upon the accomplishment of the revolution, he accepted the office of counsellor of state, and the command of the army destined to eradicate the royalists from La Vendée. In this harassing and dangerous expedition he met with great success; and though the letters he wrote to Bonaparte from the scene of his operations evince a perfect submission to his will and attachment to his person, a discovery of treason in his aid-de-camp Marbot, caused Bernadotte to lose the confidence of the first consul, and, consequently, both his employments.

The assumption by Bonaparte of the imperial dignity, again brought Bernadotte on the stage. He was one of the first who signed the document by virtue of which Napoleon was *elected* emperor of the French; and, on the inauguration, he addressed to him a very flattering harangue, in which he took formal leave of those republican doctrines which he had through life so ardently professed. In these acts, Bernadotte was probably actuated by very sincere affection for his country, being convinced, in common with many of the staunchest defenders of extreme ideas of equality, that a temporary dictatorship, in the hands of an energetic individual, was necessary to suppress the disorders which had so long produced instability and confusion. One of the first acts of Bonaparte, as emperor, was to appoint Bernadotte a marshal of the empire, and general of the army in Hanover. In September 1805, the campaign opened, which was concluded on the 2d of December by the battle of Austerlitz, and the annihilation of the Austrian power. In that series of events, Bernadotte bore a conspicuous part; and the emperor's gratitude was evinced by creating him, on the 5th of June, 1806, Prince and Duke of Ponte Corvo. At this period he possessed the confidence and favour of Napoleon in an eminent degree; and in the war which now broke out with Prussia, he received the command of one of the centre divisions of the grand army. The victory of Jena laid Prussia at the feet of Napoleon. Bernadotte put a finishing hand to the Prussian forces, by defeating their body of reserve under Prince Eugene of Wirtemburg, and afterwards in receiving the surrender of General Blücher and his corps, in conjunction with Murat and Marshal Soult. Before the conclusion of the campaign, which was illustrated by the fiercely contested battles of Eylau and Friedland, Bernadotte was wounded at the bridge of Spandau, which obliged him to quit the army, and surrender his command to Marshal Victor. In 1808, he was sent with an army into Denmark; and when, in 1809, a fresh war broke out with Austria, he was entrusted with the command of the Saxon army. A mistake alleged to have been committed by him in the battle of Wagram, drew down the censure of Napoleon, and he quitted the army on the plea of ill health; but he was afterwards given the command at Antwerp, upon the landing of the British forces at Walcheren. This was his last employment under Napoleon, and it was withdrawn from him under rather irritating circumstances.

One of the results of the famous conferences at Tilsit, between the emperors of France and Russia, was the invasion of Finland, a province of Sweden, by the latter; which was conquered in one campaign. In the midst of this invasion, the country was paralysed by civil strifes, which were ultimately appeased by the forcible, though bloodless, dethronement of the reigning monarch, Gustavus IV., and the election of the Duke of Sudermania to the throne, under the title of Charles XIII. This event took place in June 1809, when the constitution of the state was settled on a liberal representative basis. An alliance with France followed, and Napoleon was applied to by the new king, to use his all-commanding influence with Russia, to procure for Sweden the restitution, at all events, of the islands of Aland. Napoleon returned an answer, brief and bitter—"Apply to the Emperor Alexander; he is great and generous!" Thus left to itself, Sweden was at the mercy of Russia, and was compelled to cede, by treaty, what had been taken by force; thus advancing the Russian frontiers within a few hours' sail of Stockholm. By the constitution of the 6th of June 1809, the death of the heir to the throne was to be followed by an election of a crown prince by the states-general, on the nomination of the king. The violent death of Charles Augustus, crown prince of Sweden, on the 20th June 1810, created a vacancy; and to supply it, four candidates declared themselves—the eldest son of the dethroned monarch, Gustavus IV.; the Prince of Holstein; the King of Denmark; and Marshal Bernadotte, Prince of Ponte Corvo. The king of Sweden declared in favour of the latter. The states-general acceded to the nomination, in their resolution, declaring that, "considering that the high and mighty prince and lord, Jean Baptiste Julien Bernadotte, Prince of Ponte Corvo, was endowed with virtues and qualities which gave them a well-founded hope of enjoying under his reign the fruits of a legal, energetic, and beneficent government, voluntarily elected him to the dignity of Prince Royal of Sweden, by free and unanimous suffrage for themselves and their descendants; under condition, however, that, before his arrival on the Swedish territory, he should embrace the evangelical Lutheran religion, and sign the conditions which they should draw up." The election took place at Orebro, on the 21st of August 1810. Thus, with the applause of king and people, Bernadotte was elevated to the rank of heir presumptive to the throne of Sweden. It is doubtful whether the consent of Napoleon was asked upon this nomination, or even whether he received it in the light it was intended as a compliment to himself; but he did not withhold his acquiescence, and Bernadotte immediately proceeded to Sweden, where, on the 31st October 1810, he signed the necessary conditions, and on the 5th November made an inaugural speech before the king and the states-general. He was formally adopted by Charles XIII. as his son, and on that occasion assumed the name of Charles John. In the new situation in which he was placed, Bernadotte soon gave proofs of the eminent ability with which he was gifted. By his scrupulous deference and affectionate attention, he gained so perfectly the confidence of the king, that he may be said to have wielded the powers of the executive almost from his arrival. By his liberality, industry, and urbanity, he won the hearts of the people, and soon became amongst them more popular than any of their native princes had been. The moral force he thus possessed, enabled him to act, in the great crisis of events, with decisive energy for the benefit of Sweden.

From the time Bernadotte became crown prince of Sweden, he ceased to be a Frenchman. This, instead of being objected to him, seems his highest praise. It would have been dishonest in him to have accepted the munificent offer of the Swedish nation, if his intentions had been to enslave her to the ruler of the French. But it is evident that Napoleon considered him in the light of a vassal, and to this cause is owing much of the acrimonious feeling engendered in the mind of Bernadotte towards his former patron. The miseries of the "continental system" bore hard upon Sweden, which almost entirely depended upon British commerce; the forcible occupation of Swedish Pomerania and the isle of Rugen by the French, violated existing treaties; the scornful silence of Napoleon, and the outrageous insolence of Count Alquier his ambassador at Stockholm, wounded the pride not only of Bernadotte, but also of the nation. All these concurring circumstances disposed the mind of the crown prince to forsake the party of Napoleon, and to seek new allies. A treaty with Great Britain and Russia was speedily arranged, the terms demanded by him being at once agreed to. The forethought of the crown prince thus enabled him to secure the British and Russian guarantee to his after-possession of Norway, at the expense of the king of Denmark, who had been so stedfast an ally of Napoleon. Before this stipulation was of any consequence, it was necessary to overthrow that colossal power moved by this wonderful man. His reverses in Russia showed that he was not invincible, and they were followed up by a general crusade against him. The crown prince of Sweden took a personal part in the enterprise, with 30,000 Swedes. He commanded the allied army of the North of Germany, composed of Russians, Prussians, and Swedes, amounting to 120,000 men. The confederated armies moved upon Napoleon at Leipzic, and compelled him to a precipitate retreat. This success was followed up, and France, as is well known, was entered by the allied armies. Possession was taken of Paris, Napoleon abdicated, and the Bourbons were replaced on the throne of France. In these latter events Bernadotte was not personally concerned, though, after a treaty with Denmark, in which he compelled that country to cede Norway to the crown of Sweden, he crossed the Rhine, and entered France. On returning to his adopted country, he immediately set about the conquest of Norway. Since 1537, that country had been united to Denmark, of which it was a mere province. Prince Christian, the Danish viceroy, refused to surrender his post, and an opposition was attempted to the progress of Charles John. But it was quickly suppressed; the ancient national assembly of Norway, called the Storthing, was summoned, and a federal union upon advantageous terms of equality was resolved upon with Sweden. A constitution similar to that of Sweden was established—a limited hereditary monarchy, with a national representative chamber. Thus had Bernadotte the glory of uniting under one head the crowns of the Scandinavian peninsula, an achievement which Gustavus Adolphus and Charles XII. had attempted in vain. On the 7th of November 1814, he made his first speech to the Norwegian Storthing, in the name of the king.

The death of king Charles XIII., in February 1818, called Bernadotte to the throne, under the title of Charles XIV. Since his accession to the kingdom, that stupendous work, the canal from the Cattegat to the Baltic, has been completed, and was opened by him in person with great solemnity in 1822. By this effective communication, not only is an inland intercourse opened to an immense extent, but, in the event of a war, the evil consequences of shutting up the narrow straits of the Sound are perfectly neutralised.

In person, Charles XIV. is of a martial and commanding appearance, with a handsome and expressive countenance. His manners are affable and engaging. He generally resides at Stockholm, or at his country-house in the vicinity, and preserves very little state or expensive ceremony. His services to Sweden are duly appreciated by his subjects. His son, the crown prince Oscar, was born in 1799, and married in 1823 to the Princess Josephine of Leuchtenburg, grand-daughter of the king of Bavaria, by whom he has several children.

BERIOT, Madame Malibran de, a celebrated vocal actress, the eldest daughter of Senor Manuel Garcia, an eminent tenor singer in the Italian Opera, was born at Paris in 1808. At the age of eight years she accompanied her parents to London, where she spent a number of years in unceasing study. In 1825, at the age of sixteen, she made her first appearance on the stage as one of the chorus of the Italian Opera; and in 1826, she accompanied her family to America to assist in the novel attempt to establish the performance of Italian operas in that country. At New York, she was married to M. Malibran, an elderly French merchant, who soon after failed, and was cast into prison; and Madame Malibran, believing she had been deceived, voluntarily gave into the hands of his creditors her marriage settlement, left her husband, and returned to England to seek support from the exercise of her vocal and dramatic talents.

Her performances in London and Paris excited the most enthusiastic applause. Her reputation soon occupied the attention of the musical society throughout Europe; and she traversed extraordinary distances to fulfil numerous engagements in different cities on the continent. Her last engagement at Naples was for 80,000 francs and two benefits and a half, for forty nights; and that upon which she entered at Milan, with Duke Visconti, (the director of *La Scala*,) was, exclusively of other profitable stipulations, 450,000 francs for 185 performances. Her generosity was so unbounded, that, after a few years of her career, during which she had gained immense sums, she had expended so much upon her relatives and to oblige her friends, that she had little or nothing left.

Her short and singular history was closed at Manchester, where she had been engaged to attend the grand musical festival which was celebrated in that town from the 13th to the 17th September, 1836. She arrived after a rapid journey from Paris, on the 11th of September, was taken ill on the *13th*, the day of the commencement of the public performances, yet she sung on that day, and also on the 14th, with enthusiastic applause, but was *too ill to* sing more; and she expired on the 23d.

A remarkable combination of fine qualities rendered her the wonder of all who saw or heard her. Her mental conceptions were of the highest order; while in the demonstrative and executive parts of her art, in the exercise of faculties of the most rare and exciting nature, she has never been surpassed. She has been heard to sing, in one evening, in six different languages, and with unqualified admiration in all.

In March, 1836, Madame Malibran, being then in Paris, and freed by the French courts from her union with M. Malibran, was married to M. de Beriot, a Belgian, whose talents as a violinist had placed him in the highest rank in his profession. During her last illness she mentioned that she had known M. de Beriot nine years, and had been seven years married to him, but that she had not been able to make their marriage known until within the last two years.

BERRY, SIR EDWARD, Bart.; a distinguished naval officer, was the son of Edward Berry, Esq., a merchant of London, and was born on the 17th of April, 1768. Having evinced an early predilection for the sea-service, he was introduced into the royal navy, under the auspices of Lord Mulgrave, on the 5th of February, 1779, when he wanted some months of being eleven years of age; and made his first voyage to the East Indies in the Burford, of seventy guns. The first recorded circumstance of his professional life was the boarding of a French ship of war; for which action he was rewarded with a lieutenant's commission. His subsequent conduct in the glorious battle of June 1, 1794, also obtained for him the approbation of his superiors. Being first lieutenant of his Majesty's ship Captain, at Porto Ferrajo, Sir Horatio Nelson recommended him for promotion for "the masterly style in which he brought that ship to bear on the batteries." Early in 1796, Mr Berry was appointed by Sir John Jervis, under whom he had before served, to the Agamemnon, of sixty-four guns, commanded by Commodore Nelson, to whose favourable notice he soon recommended himself. For his heroic conduct at the battle off Cape St Vincent, he was made a post-captain on the 6th of March, 1797. On the 19th of December following, he commissioned the Vanguard, of seventy-four guns, fitting for the flag of his friend Nelson, with whom he soon after returned to the Mediterranean station. The proceedings of the squadron detached from the fleet off Cadiz to watch the armament about to sail from Toulon, under General Bonaparte, and which ended in the total defeat of the enemy, on the 1st of August, 1798, are well known. Soon after the termination of the tremendous conflict in Aboukir Bay, Captain Berry was sent to the commander-in-chief with the rear-admiral's despatches; from which we make the following extract:—"The support and assistance I have received from Captain Berry cannot be sufficiently expressed. I was wounded in the head, and obliged to be carried off the deck; but the service suffered no loss by that event. Captain Berry was fully equal to the important service then going on; and to him I must beg leave to refer you for every information relative to this victory." On his passage down the Mediterranean in the Leander, of fifty guns, commanded by the late Sir T. B. Thompson, he had the misfortune to be made prisoner by Le Généreux, a French seventy-four. He also received a severe wound in the desperate action which took place on that occasion. The enemy, on taking possession of their prize, not only plundered the officers and crew of every thing they possessed, but afterwards, by their cruelty and neglect, exposed the sick and wounded to almost certain death, However, Captains Thompson and Berry were permitted to return, on their parole of honour, to England, where he was knighted by his Sovereign, on the 12th of December, 1798; received a gold medal in common with the other officers who had shared in the late triumph; and was presented with the freedom of the metropolis in a gold box, value 100 guineas. He also received the thanks of the court-martial held to inquire into the circumstances attending the capture of the Leander, "for the gallant and active zeal he manifested, by giving his assistance in the combat." In the autumn of 1799, Sir Edward Berry repaired once more to the Mediterranean, as captain of Lord Nelson's flagship, the Foudroyant; and early in the following year had the satisfaction of assisting at the capture of his old opponent, Le Généreux, and of Le Guillaume Tell, a French eighty, the only remaining ship which had escaped from the battle in Aboukir Bay. In this conflict, the Foudroyant expended a hundred and sixty-two barrels of gunpowder, and two thousand seven hundred and forty-nine cannon shot of various sizes. A more heroic defence than that made by the Guillaume Tell is not on record. Her colours were kept flying until she had become an ungovernable log; and she sustained a loss of two hundred men killed and wounded. The Foudroyant's loss was eight men killed, and sixty-one wounded. During the action, Sir Edward Berry was hurt in the foot, but not so much as to induce him to quit the deck. Some time afterwards he presented the ensign of

Le Généreux to the corporation of Norwich; by whom it was suspended in St Andrew's Hall, with an appropriate inscription and trophies. In the month of June following, Sir Edward conveyed the Queen of Naples, her family and attendants, from Palermo to Leghorn; from which place lord Nelson proceeded across the continent on his way to England, and the Foudroyant to Minorca to refit. Previously to the landing of the above personages, her Sicilian Majesty presented Sir Edward with a gold box, set with brilliants, and a diamond ring. Towards the latter end of the same year, he returned to England in the Princess Charlotte frigate; and during the remainder of the war he commanded the Ruby, of sixty-four guns, stationed in the north sea. In the summer of 1805, Sir Edward Berry was appointed to the command of the Agamemnon, of sixty-four guns; and sent to join Nelson's fleet. On his passage out, he most conspicuously evinced his profound knowledge of seamanship. During the night, he found himself with a single ship, and that very old and of very small dimensions for her rate, in the midst of the Rochfort squadron, consisting of five sail of the line, two frigates, and a brig, off Cape Finisterre. He well knew the value to Lord Nelson of every additional ship, uninjured and without delay; and, by his superior seamanship and skill, he contrived to get away from them, and joined Lord Nelson a short time before the great battle of Trafalgar: and he had the satisfaction of knowing that his Lordship and the Lords of the Admiralty highly commended his conduct on this occasion. At the battle off Cape Trafalgar (the 21st of October, 1805,) and its unparalleled victory, which totally frustrated Bonaparte's plan for invading England from Boulogne, the Agamemnon was the eighth ship of the van column of the British fleet; and Sir Edward Berry sustained his high and bravely earned reputation. After that memorable event, he proceeded to the West Indies in the same ship, the Agamemnon, and participated in the victory gained by Sir Thomas Duckworth, on the 6th of February, 1806, off St Domingo. On that occasion, having silenced a seventy-four-gun ship, and caused her to strike her colours, he hastened to attack another; when, to his great surprise, the first ship rehoisted her colours, and was again captured; which circumstance caused some unpleasant altercation after the action. Upon his return home, the committee of the patriotic fund at Lloyd's presented Sir Edward with a sword, value a hundred guineas, also with three silver vases, commemorative of the three great battles in which he had been engaged. He also received two medals from the king; one for the action of Trafalgar, and the other for the action of St Domingo; and having previously obtained a medal for the action of the Nile, he was the only officer of his Majesty's navy who had the honour of possessing three medals. At the close of the same year he was created a baronet, by patent, dated Dec. 12, 1806. In the autumn of 1811, Sir Edward obtained the command of the Sceptre, of seventy-four guns; from which ship he was removed the next year into the Barfleur, of ninety-eight guns; and again sent to the Mediterranean, under Lord Exmouth. In December, 1813, he was appointed to the Royal Sovereign yacht; and in the summer of the following year, he was in attendance on the allied monarchs, during their visit to the fleet, at Spithead. He subsequently commanded the Royal George, another yacht; and on the 2d January, 1815, was nominated a K. C. B. At the general promotion, August 12, 1819, he obtained one of the vacant coloneIcies of royal marines; on the 19th July, 1821, was advanced to the rank of rear-admiral of the blue; and subsequently to that of rear-admiral of the red. For several years this distinguished officer had been suffering under severe illness and extreme debility, the effect of paralysis, which rendered him totally incapable of taking upon himself the active duties for which his distinguished talents in his profession and his high character, so eminently qualified him. At the restoration of peace, in 1814, he returned to Norfolk, and took up his residence at Catton, near Norwich; whence after some years he proceeded to Bath, for the benefit of his health. With the same design, the gallant baronet subsequently made a continental tour; and lived for some time at Pisa, in Italy. The hopes of re-establishing health were unhappily not realized; and he returned to Bath, where he expired on the 13th of February, 1831; aged sixty-two. Sir Edward Berry was remarkable for his coolness and intrepidity in carrying into action his ship, which was at all times well disciplined, but without undue severity and coercion. In private life he was exemplary for strict integrity, and was a sincere friend. He married, on the 12th of Dec. 1797, his first cousin, Louisa, daughter of the Rev. Samuel Forster, D. D., rector of Shotley, in Suffolk, but he died without issue, and the baronetcy has consequently become extinct.

' BEVERLEY; a market and borough-town in the east riding of the county of York, 183 miles N. from London, twenty-nine E. S. E. from York, and nine N. E. from Hull. It consists of several streets, the principal one being nearly a mile in length, spacious, and terminating in an ancient gateway. On the outside of this gate, the approach from the Driffield road is uncommonly fine, there being many handsome houses, especially on the north-east side. The streets are lighted and well-paved, and there is a good supply of water for the use of the inhabitants. The environs are very agreeable and the air is considered salubrious. The poorer classes of inhabitants are partially employed in the manufacture of bone lace. It has a considerable trade in coals, corn, oatmeal, malt, and leather, which is much facilitated by a canal called Beverley Beck, communicating with the river Hull. This was brought into its present condition in 1727, according to an act of parliament, but it appears to have been navigable from a very early date, being mentioned in the books of the corporation in 1344. The market-days are Wednesday and Saturday, the latter being the most important. On every alternate Wednesday there is a great market for sheep and horned cattle. The market-place is a spacious area, of the extent of four acres, in the centre of which is a stately cross supported on eight pillars, each consisting of a single block of free-stone. Races take place annually in June, on Hurnmeadow, one of the four common pastures belonging to the town, on which a commodious stand has been erected. A theatre was erected here in 1805, and is occasionally opened; assemblies take place frequently in a suite of rooms erected for the purpose.—Beverley comprises four parishes; St John, St Martin, St Mary, and St Nicholas, all within the jurisdiction of the peculiar court of Beverley. The living of St John's, to which is annexed that of St Martin's, is a perpetual curacy of the certified value of £31 6s. 8d., and in the patronage of the corporation. The church of St Martin no longer exists. The church of St John, which is popularly called Beverley minster, was founded on the site of an ancient structure, in 1060, by Kinsius, archbishop of York. The present building is supposed to have been completed in the reign of Henry III. and is a venerable cruciform structure, with two lofty towers at the west end.

The following account is given by Tanner.—"John, archbishop of York, afterwards called St John of Beverley, is said to have founded, about the year 700, in the choir of the parish church here, a convent of monks dedicated to St John the Baptist; in the nave of the church, a college of seven secular canons with seven clerks, to the honour of St John the Evangelist; and in the chapel of St Martin, adjoining this church, a society of religious virgins or nuns. But, about one hundred and sixty years after, the religious here were murdered, and the church and buildings plundered and burnt to the ground by the Danes. Not long after, some of the seculars who had fled from and escaped the Danish fury, began to settle here again and to repair the church, which was completed and endowed with revenues for seven canons, and with large privileges (to the honour of St John of Beverley,) by king Athelstan, and the favour and bounty of succeeding kings, and of the archbishops of York, who claimed the immediate patronage. This collegiate society flourished to that degree that it consisted, at the dissolution, of a provost, eight prebendaries, a chancellor, preceptor, seven rectors choral, nine vicars choral, with many chantry priests, clerks, choristers, officers and servants."

The town owed the origin of its prosperity to this monastic establishment. St John of Beverley, to whom the church is dedicated, held the see of York for thirty-three years, with a reputation for great sanctity, and afterwards retired to finish his days in obscurity and devotion in the monastery which he had founded here. "He was educated," says Fuller, "under Theodorus the Grecian, and archbishop of Canterbury. Yet was he not so famous for his teacher as for his scholar, Venerable Bede, who wrote this John's life, which he hath so spiced with miracles that it is of the hottest for a discreet man to digest into his belief." After his death, which took place in 721, he was canonized by the title of St John of Beverley. Population of Beverley in 1831, 8302.

BEVERLEY, John of. See the preceding article.

BEWDLEY; a borough town in the county of Worcester, fourteen miles N. W. from Worcester, and 122 N. W. from London. It is situated on the western bank of the river Severn, over which a very handsome stone-bridge was erected in 1797. The houses are in general well-built and of a respectable aspect, especially in the principal street, which diverges right and left from the bridge, and is partially paved but not lighted. The inhabitants have a plentiful supply of water, and the air is salubrious.

The trade of Bewdley is chiefly connected with the carrying trade on the river Severn. It was formerly the mart from which the neighbouring towns were supplied with many imported articles of consumption, but this trade has fallen off very much, in conseqnence of the recent construction of a canal from Stourport to Stourbridge. It was formerly famous for the manufacture of a species of woollen caps called Dutch caps, which was introduced here in consequence of the plague breaking out at Monmouth, where it had been previously carried on, but this trade has fallen into decay. The tanning of leather and making of combs are carried on to a considerable extent, and much malt is made for exportation. Markets were formerly held here twice a-week, but only one is now held, on Saturday.

Bewdley, with the parish of Ribbesford, and the hamlets of Wribbenhall, Hoarstone, Blackstone, Netherton, and Lower Mitton with Lickhill, under the reform act, returns one member to parliament. Population in 1831, 3908.

BEWICK, Thomas, a very eminent designer and engraver on wood, was born at Cherry Burn in the county of Northumberland, 12th Aug. 1753. His father possessed a landsale colliery at Mickley Bank. He early indicated the bent of his genius by sketching figures with chalk on the walls and doors of almost every house in Cherry Burn. This propensity was the means of introducing him to his future master, who, in passing accidentally through the hamlet, witnessed these pictorial exhibitions of the future wood-cutter, and, after the necessary introduction to his parents, secured him as his apprentice. At the age of fourteen he was bound apprentice to Mr Beilby of Newcastle, a respectable engraver, and one who took delight in instructing his pupils and encouraging their rising talents. Whether young Bewick would at an after period of life, and without the suggestion of others, have directed his attention to wood-cutting, it is difficult to say, but at all events an accidental circumstance determined his future career in the arts. The celebrated Dr Hutton, at that time a schoolmaster in Newcastle, was preparing in 1770 his great work on mensuration, and having applied to Mr Beilby to supply copper plates of the mathematical figures, he was advised to employ woodcuts instead. The great mathematician acceded to this proposal, and Mr Beilby entrusted the execution of them to his apprentice. With such beauty and accuracy were they finished, that the young engraver was advised by his master to turn his chief attention to this long-neglected art, and the consequence was a succession of mathematical works illustrated with very beautiful diagrams engraved on wood. These figures, consisting chiefly of lines, are not so difficult of execution as those in which shading and a variety of waving and blending lines are necessary to give effect, and present an image of the object to be represented. But the usefulness of the art was not long to be limited to the illustration of mathematical works. After his apprenticeship had expired, Bewick spent a short time in the metropolis, and also paid a visit to Scotland, after which he returned to Newcastle, and became a partner in his master's business. His brother John, who was seven years his junior, became their joint apprentice, and he soon evinced talents and skill equal if not superior to those of his elder brother. Unfortunately for the arts and for society, of which he was an ornament, this promising individual was cut off in the thirty-fifth year of his age. The publication of an edition of Gay's Fables afforded an opportunity for the Bewicks displaying their talents in the higher branches of wood-engraving, by the illustrations which they furnished for the work. One of these, the Old Hound, obtained the premium offered by the Society of Arts for the best specimen of wood-engraving in the year 1775. An impression of this may be seen in the memoir which is prefixed to "Select Fables," printed for Charnley of Newcastle in 1820, and sold in London by Baldwin and Cradock. The Fables of Gay were published in 1779, and in 1784, the appearance of a new edition of the "Select Fables," with an entire new set of cuts by the Bewicks, spread far and wide their reputation, and placed them above competition in the art. The animal kingdom very early presented to Mr Bewick great attractions, and a love of observing them in all their various phases, continued through life. Their forms, habits, and attitudes, became thus so familiar to him, that to delineate them faithfully, and in every conceivable position, was only what was to be expected from so excellent a draughtsman. He neglected no opportunity of making himself acquainted with those collections of foreign animals which occasionally visited Newcastle in itinerant caravans, and this led to the publication of the "History of Quadrupeds," which, after being carefully prepared, made its appearance in 1790. The prospectus of this great work was the means of introducing him to a gentleman who possessed a museum, remarkable for the number and variety of its specimens of winged and quadruped animals, living and dead, and of these Mr Bewick was invited to take drawings, which tended greatly to enrich all his subsequent publications. Amongst the remarkable wood-cuts which adorned the "History of Quadrupeds," was a representation of one of those wild cattle of the ancient Caledonian breed, which were kept in Chillingham Park, Northumberland, the seat of Lord Tankerville. This engraving is considered the *chef-d'œuvre* of the artist; but from its great size (being the largest he ever executed), it broke after a few impressions were taken off. The pieces were afterwards firmly clamped together, so as to bear the force of printing, and copies of the portrait of the bull may still be obtained. The work on Quadrupeds was very well received by the public at its first appearance, and it has ever since been held in the highest estimation. The pictorial embellishments exhibit every excellence which engravings of animals ought to possess—boldness of design, variety and exactness of attitude, correctness of drawing, and discrimination of general character. A spirit of life and animation pervaded every figure, and thus a lively idea of each different animal is conveyed. Short descriptions accompanied the engravings, chiefly drawn up by Mr Bewick's coadjutors, Messrs Hodgson and Beilby, but subject, it is highly probable, to his corrections and additions. He who had studied living nature so closely in all her varied aspects, must have accumulated a rich store of original observations and anecdotes wherewith to adorn his works. But a great and unexpected charm belonged to the History of Quadrupeds—this was the profusion of vignettes and tail-pieces with which the whole volume was adorned. These exhibited remarkable inventive genius, and a skill in catching the very lineaments, in which the specific expression of the species resides, never before equalled. Many of these embellishments are connected with the manners and habits of the animals near which they are placed; others, again, merely exhibit the fancies and sportive or dry humour of the artist, his particular notions of men and things, partaking both of the droll and the pathetic, as, for instance, a ragged sheep picking at a besom—a troop of Savoyards, weary and foot-sore, tugging poor bruin to the next fair—a broken-down soldier, trudging, with stern patience, through the slant rain-storm—a poor travelling woman looking wistfully at a mutilated milestone—a blind old beggar, whose faithful dog stops short, with warning whine, on the broken plank that should have crossed the swollen brook—and so on. This great work established the fame of Bewick on a foundation which could not be shaken. It has passed through numerous editions, with continually growing improvements.

Amongst the other works embellished by Bewick, were the "Deserted Village" of Goldsmith, and Parnell's "Hermit." These were executed in conjunction with his younger brother, who had removed to London, where he soon became very eminent in his profession. Amongst others whose attention he attracted, was Mr William Bulmer, the spirited proprietor of the Shakspeare press. It was under his auspices that the above poems were published, and the success which they met with induced him to speculate still further. He projected a new edition of Sommerville's "Chase," embellished with wood-engravings; and the younger Bewick had, with the exception of a single cut, drawn the whole of the designs on the blocks, when he was cut off by a pulmonary complaint, probably contracted by too great application. They were all, however, beautifully engraved by Thomas Bewick, and the appearance of the work materially increased his reputation. The subjects which ornament the work being entirely composed of landscape scenery and animals, were well adapted to display the beauties of wood-engraving. In 1797 appeared the first volume of the "History of British Birds, comprising the Land Birds," the letter-press being furnished by Mr Beilby. Before the publication of the second volume on "British Water Birds," a separation of interests took place, so that its compilation and completion devolved on Mr Bewick alone, with the assistance of a literary friend. The usual excellences of the artist were displayed in this beautiful and valuable work. The drawings are minutely accurate, and express the natural delicacy of feather, down, and foliage, in a peculiarly happy manner. The value of the work was greatly enhanced by the vignettes and tail-pieces, in which the genius, humour, and fancy of the artist, are even more conspicuous than in the volume on Quadrupeds. His next works were four very large cuts, representing the zebra, the elephant, the lion, and the tiger, which were engraved for the proprietor of a menagerie. In 1818, he published "The Fables of Æsop and others, with designs by Thomas Bewick;" and two or three years afterwards, appeared a volume of Select Fables, the wood-cuts being a selection from the earlier works of the Bewicks. The public were thus enabled to study the gradual advancement towards excellence which had been made by the revivers of this elegant and useful art.

Several of the latter years of Mr Bewick's life were, in part at least, devoted to a work on British Fishes. A number of drawings were made and engraved, and a very large proportion of vignettes prepared, when the death of the projector put a stop to the undertaking. The last production of Mr Bewick was a cut of an old horse, intended to head an address on cruelty to that noble animal, the proof of which was brought to him from the press only three days previous to his dissolution.

The grand improvement which Mr Bewick introduced into wood-cutting (it merits the higher title of invention) was the production of a complete and finished style, with a perspective effect. This was obtained by slightly lowering the surface of the block where the distance or lighter parts of the engraving were to be shown to perfection, an idea suggested by his early friend Mr Bulmer. Certain parts of the block he left untouched by the graver, and by this means introducing great breadth of light and shade, he produced a bold and determined effect, with a mellowness and brilliancy of tint almost equalling in softness the most highly finished drawings in Indian ink.

Mr Bewick's death took place at his residence, near the Windmill Hills, Gateshead, on the 8th Nov. 1828, in the seventy-sixth year of his age. In his mode of living, Bewick was plain and regular. He practised early rising, indulged in rustic and athletic sports, and accustomed himself to hardships of various kinds. During the severest winter he kept the windows of his bedroom open, and it was no uncommon occurrence for him to find the snow drifted upon his bed-clothes. With a frame originally robust and vigorous, and the employment of various means to secure health, it is not surprising that he enjoyed it in high perfection. The warmth of his attachments, particularly to the various branches of his own family, was very great. During his apprenticeship, his regular custom was to visit his parents once a-week. They lived at Cherry Burn, which is fourteen miles distant from Newcastle; and when the river Tyne happened to be so swollen as to prevent his getting across, he used to shout over to his family, and after obtaining the required information relative to their health, return home. With respect to his social habits, it is related of him that he did not mix a great deal with the world, for he not only possessed a singular and most independent mind, but in his habits he was naturally most persevering and industrious, qualities of character incompatible with the frivolities of society. At his bench he worked and whistled with light-hearted, joyous industry, from morn till night, and the number of blocks which with indefatigable perseverance he engraved, is almost incredible. He died, as he had lived, an upright and truly honest man; and breathed his last, after a short illness, in the bosom of the family whose society he preferred to every other enjoyment.

BICKERTON, Sir Richard Hussey, of Upwood, Huntingdonshire, K. C. B. and K. C.; admiral of the Red; general of the royal marines; vice-president of the naval charitable society; and F.R.S., was the only surviving son of Sir Richard, himself a gallant naval officer, by Marie Anne, daughter of Thomas Hussey, Esq., of Wrexham. He was born on the 11th of October, 1759, and entered the naval service in December, 1771, as a midshipman, on board the Marlborough 74, commanded by his father, with whom he removed, October, 1773, into the Princess Augusta yacht; and from her was discharged, June, 1774, into the Medway, of sixty guns, bearing the flag of vice-admiral Mann, commander-in-chief on the Mediterranean station, with whom he continued till 1776, and was then lent to the Enterprise frigate, commanded by Sir Thomas Rich, as affording a better opportunity for him to learn his duty. He afterwards joined the Invincible, of seventy-four guns, Captain Hyde Parker, and returned to England in November, 1777. On the 16th of December, 1777, Mr Bickerton was made a Lieutenant, and appointed to the Prince George; but soon after left that ship, and accompanied Captain Middleton (afterwards Lord Barham) into the Jupiter, of fifty guns.

On the 20th of October, 1778, the Jupiter, then commanded by Captain Reynolds (afterwards Lord Ducie), being on a cruise in the Bay of Biscay, in company with the Medea, a small frigate, fell in with the Triton, a French line-of-battle ship. At five p. m. the Jupiter brought the enemy to close action, in which she was joined by the Medea; but unfortunately, at the commencement of the engagement, a thirty-six pound shot entered the bow of the latter, under water, and compelled her to bring to, for the purpose of stopping the leak it had occasioned. Captain Reynolds, however, continued the action, with great bravery, till eight o'clock, when the French ship made sail, and bore away for Ferrol; where it was reported that she arrived, with the loss of her captain, and 200 men killed and wounded. The gallantry of Captain Reynolds and his officers was greatly enhanced by the circumstance of the Medea having been totally prevented from affording him any effectual assistance. On the return of the Jupiter to England, Captain Reynolds made a point of recommending all his officers; and, on the 20th of March, 1779, obtained the rank of master and commander for his first lieutenant, Mr Bickerton; a sufficient proof of the able and satisfactory manner in which that gentlemen had conducted himself.

At the close of 1779, a squadron, under Captain Charles Fielding, was sent to intercept a fleet of Dutch merchantmen, said to be destined to France, laden with warlike stores. On the 2d of January, 1780, they were discovered a little to the westward of the isle of Wight, escorted by two ships of the line and two frigates, commanded by Admiral Count Byland. The British commodore desired that he might be allowed to search the merchant vessels, which the count persisted in refusing, and fired at the boats in their attempt to board them; to resent which insult the commodore ordered a shot to be directed ahead of the Dutch admiral, who instantly discharged a broadside into the Namur, and, upon her returning it, struck his colours. On this occasion the commodore employed Captain Bickerton, then in the Swallow sloop of war, to assist him in detaining such Dutch ships as might fall in his way; and expressed himself highly pleased with the vigilance he displayed. Seven of the merchant vessels, laden with naval stores, were detained; and Count Byland was given to understand, that he was at liberty to hoist his colours, and prosecute his voyage with the remainder. The Dutch admiral accepted the former part of the proposal, and saluted the British flag; but declined proceeding without the whole of the vessels, and sailed into Spithead. From the darkness of the night, many of the transports with stores escaped, and got safe into Brest. Towards the end of the same year, the Swallow was ordered to the West Indies; and in February, 1781, Captain Bickerton was present at the capture of St Eustatia, by the naval and military forces under the respective commands of Sir George Rodney and General Vaughan. On the 8th of the same month, Captain Bickerton was posted into the Gibraltar, of eighty guns; and in the skirmish which took place between the British and French fleets under the respective commands of Sir Samuel Hood and the Count de Grasse, April 29th following, he commanded the Invincible, of seventy-four guns.

Captain Bickerton was subsequently appointed in succession to the Russel and Terrible, both seventy-fours: but finding the latter unfit for service, he exchanged into the Amazon frigate, and was ordered to England. The Amazon was paid off in the month of February, 1782. In September following, he obtained the command of the Brune, another frigate; but, in consequence of the peace which took place in 1783, she was soon after put out of commission. Captain Bickerton was not called upon again till January, 1787, when he commissioned the Sybil, and proceeded to the Leeward islands; on which station he remained, under the orders of that excellent officer the late Sir William Parker, till the year 1790: but as general tranquillity then prevailed throughout Europe, he was not concerned in any transaction immediately deserving of record.

In February, 1792, he succeeded to the title, on the demise of his father: and in the following year commanded the Ruby, of sixty-four guns. He afterwards removed to the Ramillies, seventy-four, and cruised with lord Howe, in the Bay of Biscay, during the autumn of 1794. In October, 1794, the Ramillies carried General Sir John Vaughan to the West Indies, where she continued till July, 1795, and was then ordered to Newfoundland, from whence she returned to England in the month of November following. During the whole of the ensuing year, Sir Richard Bickerton served in the North sea, under Admiral Duncan. In 1797, he was appointed to the Terrible, of seventy-four guns, forming part of the channel fleet, at that period commanded by Lord Bridport, on which service he continued till promoted to the rank of rear-admiral, February 14th, 1799. In the autumn of that year, he hoisted his flag at Portsmouth, as assistant port-admiral; a situation requiring an extraordinary degree of vigilance and activity.

On the 13th of May, 1800, Sir Richard sailed for the Mediterranean, in the Seahorse, being appointed to a command on that station, under Lord Keith. Generals Abercromby, Moore, and Hutchinson, were passengers on board the same frigate. On the arrival of Sir Richard Bickerton, he hoisted his flag on board the Swiftsure, Captain Hallowell (the present Admiral Sir Benjamin Hallowell Carew), and proceeded to Cadiz, with four seventy-fours and two frigates under his orders, to blockade that port. The expedition against the French in Egypt being ready, Sir Richard Bickerton left Cadiz, and proceeded with Lord Keith to Alexandria, which port he blockaded until it surrendered to the British arms.

On the news of peace arriving in Egypt, Lord Keith returned to England, leaving Sir Richard at Alexandria, to superintend the embarkation of the French army; a service that was conducted with so much celerity, as to excite from the republican General Menou, not only his grateful acknowledgments, but the flattering compliment that "the vigilance of Sir Richard's squadron had accelerated the reduction of that place, as it cut them off from all supply." During the rear-admiral's stay in Egypt, he had the honour of being invested by the Captain Pacha, with the insignia of the Turkish Order of the Crescent. The ceremony was performed on the spot where the battle was fought which decided the fate of that country.

During the short-lived peace, Sir Richard Bickerton commanded in the Mediterranean, with his flag in the Kent, of seventy-four guns. On the 23d of April, 1804, he was advanced to the rank of rear-admiral of the red, and about the same time hoisted his flag on board the Royal Sovereign a first rate; and when Lord Nelson went in pursuit of the combined squadrons to the West Indies, he was left by his lordship to command on that station. In Sept. 1805, ill health compelled Sir Richard to return to England On the 9th of Nov 1805, he was advanced to the rank of vice-admiral. A change taking place in the administration, Sir Richard Bickerton was, in April, 1807, nominated one of the lords commissioners of the admiralty, and soon afterwards, at the general election, was returned to parliament as one of the representatives for Poole. While he was at the board of admiralty a promotion of flag officers took place, and Sir Richard Bickerton, on the 31st of July, 1810, was made admiral of the blue. Sir Richard Bickerton retained his seat at the admiralty until 1812, when he succeeded Admiral Sir Roger Curtis as commander-in-chief at Portsmouth. The Order of the Bath being divided into three classes, Sir Richard Bickerton was, in 1815, created a knight commander of the same; and on the death of Admiral Sir Richard Onslow, the father of the present lady Hyde Parker, in January, 1818, was appointed lieutenant general of the royal marines; and upon the accession of his late Majesty to the throne, was made general of that meritorious corps, which had been held some years by the king while duke of Clarence.

On the 24th of May, 1823, in compliance with the will of his maternal uncle, lieutenant-general Vere Warner Hussey, Sir Richard Bickerton took the name of Hussey in addition to his own. He married, Sept. 25th, 1788, Ann, daughter of the late Dr James Athill, of Antigua, who survives him. Sir Richard Hussey Bickerton expired at Bath, 9th of February, 1832, in the seventy-third year of his age. There being no issue, the baronetage became extinct.

BIDEFORD; a sea-port in the county of Devon, 202 miles from London. It is situated on the river Torridge, a short distance above its confluence with the Taw, which falls into the bay of Barnstaple. The greater part of the town is built on a steep acclivity on the western side of the river, and the remainder is at the foot of a hill on the eastern side. These are connected by a stone bridge, consisting of twenty-four arches, and [illegible] yards in length, below which vessels of sixty tons burden can pass. It was erected in the fourteenth century, and is endowed with lands for keeping it in repair. There is a considerable trade carried on at this port, which includes within its jurisdiction the harbours of Clovelly and Hartland. Skins, cordage, oak-bark, fruit, earthenware, corn and flour, are among the exports; American and Baltic timber, and coal from Bristol and Wales, form now the chief imports. There is a convenient quay, upwards of 1200 feet in length, which, except at ebb-tide, can be approached by vessels of 300 tons burden. Vessels of 300 tons burden in full tides can come up as far as the bridge, above which lighter vessels can pass to a considerable distance, and enter the Torrington canal through a sea lock at the distance of two and a half miles. Ship-building forms the principal business of the place. Population in 1831, 4846.

BIGLAND, John, was a native of Skirlaugh, in

Holderness, and far the greater portion of his life was spent in the humble occupation of a village schoolmaster. He moved his residence more than once; but we believe his school was for the longest period at Rossington, near Doncaster. Such an employment was far from profitable; but Mr Bigland knew how to live upon little, and he continued to plod on from manhood to maturer age without the hope of bettering his condition. Under these circumstances, and when upwards of fifty years of age, he became an author, and published his first work in 1803. It consisted of "Reflections on the Resurrection and Ascension of Christ," a subject which had long occupied his attention, and originally studied, not with a view to publication, but for the purpose of combating his own scepticism, and establishing his faith by incontrovertible deductions. This done, he committed the result to the public, not with the hope of attaining any literary honours, but of convincing others as he himself had been convinced. The success of this little volume, and the flattering commendations bestowed upon it, made the writer of more consequence both in his own estimation and the estimation of others, and in the following year he published his "Letters on the Study and Use of Ancient and Modern History;" and "Letters on the Modern History and Political Aspect of Europe." As these were well received, he from that time became an author by profession. His subsequent productions are, Essays on various subjects, 2 vols. 1805; Letters on Natural History, 1806; a System of Geography and History, 5 vols. 1809; History of Spain, 2 vols. 1810; History of Europe from the Peace of 1783 to the present time, 2 vols. 1811 (in a later edition continued to 1814;) the Philosophic Wanderers, or the History of the Tribune and the Priestess of Minerva, 1811; Yorkshire, being the 16th volume of the Beauties of England and Wales, 1812; the History of England; Letters on Natural History, from the earliest Period to the Close of 1812, 2 vols. 1813 (subsequently continued to 1814;) a System of Geography for the use of Schools, 1816; an Historical Display of the Effects of Physical and Moral Causes on the Character and Circumstances of Nations, 1817; Letters on French History, 1818; also Letters on English History, and a History of the Jews. He likewise contributed to some of the magazines. He died at Finningley, near Doncaster, Feb. 22, 1832, aged 82.

BILLINGS, William, an English private soldier of the last century, remarkable for his long and adventurous life, was born in the parish of Alstonefield, Staffordshire, in the year 1679. In his youth he was a farmer's servant; but preferring a life of enterprise to the quiet of domestic life, and being, perhaps, roused by the warlike spirit of the times, he quitted his situation in 1702, and, going to Derby, enlisted in a regiment then stationed in that town. This regiment afterwards formed part of the expedition which was sent, under the command of Sir George Rooke, against Gibraltar, which at that time belonged to the king of Spain. After Gibraltar was taken, Billing's regiment was sent into Flanders, and formed part of the army of Prince Eugene and the Duke of Marlborough. At the battle of Ramillies, 1706, Billings had the honour of saving the life of the "great captain." The duke was thrown from his horse in leaping a ditch, and was nearly surrounded by a detached party of Marshal Villeroi's army, determined to take him either dead or alive; when Billings, observing the perilous situation of his commander, immediately brought to his relief a few of his comrades, who threw themselves between their general and the enemy, and succeeded in bringing him off in safety. But although Billing's intrepidity and presence of mind had saved the duke, he had himself the misfortune to receive, during the skirmish, a musket-ball in the thick part of his thigh, which the surgeons were unable to extract. About thirty years after this affair, however, it worked itself downward, and eventually came out underneath his ham. Billings carefully preserved, to the day of his death, this "French cherry," as he jocularly called the ball. After having had his due share in the several actions of the memorable war under Marlborough, Billings returned to England in 1712, with the safe possession of all his limbs. In 1715, he served against the rebels; and, in 1745, he also served at Prestonpans and Culloden. He spent in the army *three quarters of a century*, and that principally in foreign lands, but never received any promotion; and, for some unexplained reason, on his discharge no pension was allotted to him. The old man was, however, during his remaining days, preserved from entire destitution by the charity of his neighbours. He died in 1794, at the advanced age of 114 or 115 years. From his birth to his death, he never experienced a day's illness; and his final passage from life was perfectly tranquil. In the churchyard of Longnor, a small market-town in Staffordshire, a head-stone, with a doggerel couplet, points out his grave.

BILSTONE; a manufacturing town in Staffordshire, situated on the high road from London to Holyhead by Shrewsbury, distant from Wolverhampton, three miles S. E., from Stafford, nineteen miles S. by E., and from London, 120 miles, N. W. It owes its prosperity to the numerous and rich mines of coal and iron-stone in its vicinity. The principal manufactures consist in the heavier description of iron castings, machinery of all kinds, tin-plate, japanned and enamelled wares, nails, wire, and screws of iron, connected with which there are several collateral branches. Clay of a coarse kind, used for making pottery, and a kind of deep orange coloured sand which is found very useful in casting, are procured in abundance; there are also quarries from which grindstones of a superior quality are obtained. Coal mines are numerous and productive; and at Bradley, in the immediate vicinity, a stratum of coal about four feet in thickness has been burning for half a century, and has materially injured several acres of land. The Birmingham and Staffordshire canal passes near the town, and in the neighbourhood there are many other branches, through which a communication is opened towards every part of the kingdom, through the Mersey, Dee, Ribble, Ouse, Trent, Derwent, Severn, Humber, Avon, and Thames. The exports consist chiefly of coals and iron-work of all kinds. The markets are held on Monday and Saturday. Bilstone unites with the township of Wolverhampton in sending two members to parliament. Population in 1831, 14,492.

BIRMINGHAM (*a*.) Birmingham is mentioned in Doomsday book, under the name of Bermengeham. The name, as well as those of the neighbouring hamlets of Castle and West Bromwich, is supposed to have been derived from the abundance in which broom (Sax. *brom*) grows in the vicinity. Some antiquaries have supposed it to be the *Bre-*

menium of the Romans, others state that it was a British town of some importance, and celebrated for the manufacture of arms, previous to the Roman invasion, but very little is known of its early history. During the last four centuries it has been variously written Brumwycheham, Bromwycham, Brummagem, and Burmyngham, also with various transpositions of the vowels in the two first syllables. In the reign of Charles I., Birmingham distinguished itself in the parliamentary cause, and was the scene of some conflicts, in the last of which in 1643, it suffered considerably, having been taken, partially burnt, and a heavy fine inflicted on the inhabitants by Prince Rupert. This town was the scene of a series of riots in July, 1791, which commenced on the 14th and continued several days, during which much property was destroyed, including the house, library, and philosophical apparatus of Dr Priestley. As these riots furnish an instructive example of the dangers of popular ignorance, some account of them may be given here. The breaking out of the French Revolution occasioned in this country hopes and fears equally unfounded when carried to excess, as they frequently were, by bigotted or over-zealous individuals. The excitement into which the former were thrown prevented them from distinguishing the good from the bad in the institutions under which they lived: the latter class of persons indulged in expectations of a period of happiness and liberty altogether inconsistent with the existence of society. While these were the views under which the most violent partizans acted, the more sober portion of the community were in extreme agitation, and in this unhealthy state of public opinion, a trivial circumstance was calculated to produce much feverish and unwarrantable alarm among those whose views were not sufficiently clear-sighted to perceive the true nature of the events which were taking place around them, and who did not possess the wisdom to direct their consequences to useful ends. At this period there resided at Birmingham, Dr Priestley, who looked with hope to the spread of liberal sentiments being hastened by the great movement which was taking place in France. Writing to one of his friends, he said, "We are, as it were, laying gunpowder, grain by grain, under the old building of error and superstition, which a single spark may hereafter inflame, so as to produce an instantaneous explosion; in consequence of which that edifice, the erection of which has been the work of ages, may be overturned in a moment, and so effectually as that the same foundation can never be built upon again." By some means the above passage was made public, and it had the effect of exciting the enmity of all who clung, from a feeling of veneration, to the old institutions which they saw menaced. The transition was easily made from a defensive to an offensive position; and it was not long before the occasion arose for such a change being effected. The 14th of July, 1791, being the second anniversary of the taking of that old fortress of despotism, the French bastile, was fixed upon by one of the parties into which the town was divided as a day of rejoicing, and it was determined to celebrate it by a public dinner. The other party also resolved upon a counter display, and they, with very different sentiments, also resolved to get up a public dinner on the same day. A number of persons congregated during the evening around the head-quarters of each party;—rumours circulated among them, which they were too unenlightened to see the folly of, and they made an attack upon the house in which the party friendly to the French Revolution were assembled. The windows were soon demolished, and the rooms were searched by the rabble, who entered in the hope of laying hold of Dr Priestley; but he had not attended the dinner. The multitude then proceeded to the chapel in which he was accustomed to officiate, and in half an hour it was in flames. Afterwards they set out for Dr Priestley's residence, which was about a mile out of the town, they gutted it of the furniture, books, philosophical instruments, and manuscripts, on which he had spent some of the most valuable portion of his life. On the following day (Friday, July 15th,) a number of the respectable inhabitants assembled at St Philip's Churchyard to be sworn in as special constables; but they were but imperfectly organised, and the civil authorities did not display sufficient energy for the occasion. The mob, therefore, recommenced the work of destruction, but were at one time dispersed by the special constables. They however rallied again, and in a second attempt to disperse them one of the special constables was killed. No military force being present, the mob went on to exercise their mischievous power uncontrolled. About 10,000 of them proceeded to the house of Mr Ryland, at Easy Hill, and the premises were soon in flames. The wine-cellar was broken open, and many of the besotted rabble became intoxicated with its contents, and were in it when the roof and heated ruins fell to the ground. This day the places in which persons were confined for crime were broken open, and the inmates liberated. Barrels of ale were broached in the street before the houses of respectable persons who wished to propitiate the favour of the capricious body into whose hands the town had fallen. Mr Hutton was one of those who had placed a barrel of ale before his house to regale the mob. When it had been emptied, they proceeded to drag him out of the house, and compelled him to give them money, and, not content with his compliance, they confined him in a public house until they had drunk 329 gallons of ale at his expense, and afterwards exhibited their good faith towards him by destroying everything in his house to the minutest article. The rioters closed their proceedings this day by the destruction of Bordesley Hall, the residence of Joh Taylor, Esq. On Saturday the work of havoc was resumed. The house of Mr Hutton, at Bennett's Hill, and that of Mr Humphries, were destroyed. At the latter place it was determined to make some defence, but the idea occasioned much alarm among the female part of Mr Humphries' family that it was abandoned. As the mily made their escape from the house the mob tered it, and the work of destruction was speedily completed. At the house of Mr W. Russell, Showell Green, another attempt was made to stand the mob, but without success. During day the houses of Mr Hawkes, Lady Carhampton, Mr Hobson, Mr Pidarck, Mr Harwood, and Coates, were destroyed. On Sunday morning work of mischief was resumed by an attack on house and chapel of Mr Cox, at Wharstock. contents of the cellar were first drunk, and house and premises were then set on fire, the waiting to see that the ruin was complete; which they disposed of the meeting-house and sonage-house of Kingswood in a similar manner. They then proceeded to Edgbaston Hall, they displayed their usual fury. At ten o'clock in the evening, three troops of cavalry had arrived at Birmingham, and on this intelligence being communicated to the rioters they discontinued their lawless operations. They did not, however, at once disperse, but, forming themselves into small bodies, levied contributions on hamlets and farmhouses, until finally the country people collected together in their own defence and dispersed the ruffians. During the riots, three of the persons who sustained the greatest damage to their property employed in their several concerns many hundred persons, who would be thrown out of employment by the derangement which such events occasion in manufacturing and commercial establishments. After a considerable interval all those whose property had been injured by the rioters recovered damages from the county to the extent of £26,961. Dr Priestley made his escape from his house with his wife and family. Before quitting his residence the fires were put out, in the hope that the mob, not finding immediate facilities for destroying the house, might be induced to relinquish the idea. This precaution, however, had not the desired effect, and the laborious task of hewing and tearing the house to pieces was quickly begun. Dr Priestley first retreated to Worcester, and afterwards to London, where he was appointed to succeed Dr Price, as the pastor of a congregation at Hackney. He finally quitted his native land in 1794, for America, where he purchased 200,000 acres of land on the banks of the Susquehannah, about 120 miles from Philadelphia. Here he spent the remainder of his days in retirement, and died February 6th, 1804, in the seventy-first year of his age. A tablet of white marble, with a suitable inscription, was erected to his memory at Birmingham, by the congregation over which he had presided.

The history of Birmingham, as the midland metropolis of art and manufacture, may be divided into three periods. The first period may be supposed to have terminated at about the restoration of King Charles II. Down to this time (the Restoration) though Birmingham had been a manufacturing town from unknown antiquity, her artisans, in general, kept themselves within the smoke of their forges, to execute such orders for implements of war, and husbandry, carpenters' and other tools, kitchen utensils, and such articles as might be periodically ordered of them, by those who required them, or by merchants or their itinerant agents. At the Restoration, therefore, may be said to commence the second period of the manufacturing history of Birmingham, when a travelled king and a luxurious court introduced a taste for articles of a more elegant and costly description than those that had been previously in demand, and Birmingham naturally took the lead in the manufacture of them. Thus she proceeded in her prosperous career of industry and skill to that important era—the discovery of the steam-engine. Although it was at Glasgow where Watt first made [illegible] improvements on the steam engine, it was [illegible]ham, or at least at Soho, in the vicinity [illegible]ham, where these were first carried into [illegible] practice. When Watt's partner, Dr [illegible], became unable to render him the stipulated assistance in his undertakings in consequence [illegible] pecuniary embarrassments which followed [illegible] of some mining speculations in which he [illegible], Watt was so much discouraged, that he was on the eve of abandoning the further prosecution of his plans. Mr Boulton had at this time become well known as one of the most intelligent and enterprising manufacturers in the kingdom; and, with the consent of Mr Watt, a negotiation was opened with him and was brought to a conclusion in 1773, when Dr Roebuck resigned his share of the steam-engine patent to Mr Boulton on terms very advantageous to himself. This was one of the most happy events in the career of Watt, for his new partner was a man of wealth and of great personal influence: "to a most generous and ardent mind," says Playfair, "he added an uncommon spirit for undertaking what was great and difficult. Mr Watt was studious and reserved, keeping aloof from the world; while Mr Boulton was a man of address, delighting in society, active, and mixing with people of all ranks with great freedom and without ceremony. Had Mr Watt searched all Europe he could not have found another person so fitted to bring his invention before the public in a manner worthy of its merit and importance; and, although of most opposite habits, it fortunately so happened that no two men ever more cordially agreed in their intercourse with each other." The value to Watt of such a partner as this may be best estimated by the fact, that the firm expended no less a sum than £47,000 on the speculation in Watt's steam-engines before they began to receive any remuneration. When Watt went to Birmingham, part of the establishment at Soho was appropriated to his use, and with the advantages he there enjoyed he soon produced some capital engines. They came but slowly into use, but in time found their way into the mines and manufactories all over the kingdom. It was ultimately found necessary to erect, at a convenient distance, an iron-foundry, to which comes a branch of the Birmingham canal, whereby coals, iron, sand, &c., were brought to a wet dock within the walls, and the engines and other heavy goods transported in boats to every part of the kingdom. The firm, however, did not confine its attention to the manufacture of engines, but devised means of applying their powers to various operations in the manufactures of Soho. Thus the extensive experience of the proprietors enabled them to apply a steam-power to the boring of cylinders, pumps, &c., to drilling, to turning, to blowing their melting-furnaces, and to whatever tended to render their manufactures more perfect and to abridge human labour. But of all the different processes conducted at Soho perhaps none have, first and last, attracted more attention than the application of steam to coining at the Soho Mint. The coining-mill, or engine, which Mr Boulton first established there in 1783, was afterwards much improved, and ultimately not only produced coins with astonishing expedition but with an accuracy which the coinage of this country had not previously exhibited. The engine in this mint, as thus improved, worked at once eight machines, each capable of striking from seventy to eighty-four pieces in a minute, or between 4000 and 5000 in an hour, so that the eight machines together would produce between 30,000 and 40,000 coins in one hour. The following are the processes executed by these machines as operated upon by the steam-engine:—rolling the masses of copper into sheets; fine rolling of the same cold through cylindrical steel-rollers; clipping the blank pieces of copper for the die; shaking the coin in bags; striking both sides of the coin at once, and milling the edges. The improvement in the coin itself may be seen by a comparison of the copper coins before and since 1799, in which year Mr Boulton contracted for the copper coinage on his improved principle; since which time no alteration has taken place, except perhaps a little improvement in the finish. Of the produce of his mint the copper coins now in circulation are specimens; besides which copper has been coined by contract for the different European states, for the East India Company, and for the Americans. Mr Boulton's improvements in the coining mill, originally brought into operation at Soho, have also been adopted at the Tower Mint, and by various European governments. This has tended greatly to the improvement of the modern coinage, not only in copper, but in silver and gold, the same process being of course applicable to other metals. Indeed both gold and silver have on different occasions been coined at Soho, not to speak of the various exquisite medals which have from time to time been struck there. In short, Soho, although a nominally private concern, has, in point of fact, been an establishment of the very highest national importance; and this not only in its large operation upon the commercial interests of the nation, in extending the power of man, and in enlarging the comforts and conveniences of life, but also in improving the public mind by the encouragement it has given to artists of all descriptions, and by the healthy rivalry and competition in skill which is kept continually in exercise.

The prosperity of Birmingham has arisen from the extensive manufactures carried on in it, the abundance of coal and iron ore in the neighbouring districts, and the extent of its connections by inland navigation with every part of the kingdom. It has been celebrated for workers in iron since the time of Henry VIII., when Leland described it as inhabited by "smiths that use to make knives and all manner of cutting tools, and lorimers that make bittes, and a great many nailours." In former days, one of the most flourishing manufactures of Birmingham was that of the shoe-buckle. When this ornament was in fashion, about 2,500,000 pairs were annually made here, giving employment to about 5000 artisans. The buckle was worn for about a century in England. It was made in all shapes and sizes. The large square buckle, plated with silver, was the fashion of 1781, and was even adopted by the ladies. Early in the present century, the buckle became unfashionable, and it is now only to be occasionally seen on the shoes of very old men.

The button manufacture is an important branch of Birmingham manufacture. The manufacture comprises about sixty separate branches of handicraft, many of which are assigned to females and boys. The sweepings of the manufactory of the late Mr Taylor, where the costly metals were used, receiving the filings and minute particles which fly off during the various operations, are said to have been sold annually to the sweep-washer for £1000. In the manufactory of Messrs Heaton forty tons of button-shanks have been made annually; and the whole number of shanks made annually in Birmingham is estimated at 600,000,000.

"Birmingham (says the late Mr William Hutton, in his history of the town) began with the productions of the anvil, and probably will end with them. The sons of the hammer were once her chief inhabitants; but that great crowd of artists is now lost in a greater. Genius seems to increase with multitude. Part of the riches, extension, and improvement of Birmingham, are owing to the late John Taylor, Esq., who possessed the singular power of perceiving things as they really were. The spring and consequence of action were open to his view. He rose from minute beginnings to shine in the commercial, as Shakspeare did in the poetical, and Newton in the philosophical hemisphere. To this uncommon genius we owe the gilt button, the japanned and gilt snuff-boxes, with the numerous race of enamels. From the same fountain issued the painted snuff-box, at which one servant earned three pounds ten shillings per week, by painting them at a farthing each. In his shops were weekly manufactured, buttons to the amount of £800, exclusive of other valuable productions. One of the present nobility, of distinguished taste, examining the works with the master, purchased some of the articles; among others, a toy of eighty guineas value; and while paying for them, observed with a smile, 'he plainly saw he could not reside in Birmingham for less than two hundred pounds a-day.' Mr Taylor died in 1775, at the age of sixty-four, after acquiring a fortune of £200,000.

"The art of nail-making is one of the most ancient in Birmingham. It is not, however, so much a trade *in* as *of* Birmingham, for there are but few nail-makers left in the town; the nailers are chiefly masters, and rather opulent. The manufacturers are so scattered round the country, that we cannot travel far in any direction out of the sound of the nail-hammer. Birmingham, like a powerful magnet, draws the produce of the country to herself. When I first approached Birmingham (says Mr Hutton) from Walsall in 1741, I was surprised at the prodigious number of blacksmiths' shops upon the road, and could not conceive how a country, though populous, could support so many people of the same occupation. In some of these shops I observed one or more females stript of their upper garment, and not overcharged with their lower, wielding the hammer with all the grace of the sex. The beauties of their face were rather eclipsed by the smut of the anvil. Struck with the novelty, I inquired 'Whether the ladies of this country shod horses?' but was answered with a smile, 'They are nailers.'"

Swords are supposed to have been made in Birmingham in the time of the Britons; but fire-arms are a comparatively modern invention, and the manufacture of them appears to have been almost, if not entirely, confined to London down to the revolution in 1688. The society of gun-makers was incorporated in the 13th Charles I. ([illegible]) under the name of the Master, Wardens, and Society of Gun-makers of the city of London, from whose manufactories the parliamentary forces in the civil wars were supplied with fire-arms. But soon after the restoration, this branch of manufacture naturally found its way to Birmingham. From 1805 to 1815, 3,079,120 gun-barrels and 2,[illegible] locks, for the use of government, were manufactured in Birmingham alone; of which, 1,[illegible] were completed as muskets, carbines, &c. The supply was in general 30,000 stand of arms per month, or two in a minute! This number is exclusive of fire-arms manufactured there for the East India Company's service during the same period, to the number, as it has been calculated, of about 1,000,000: and exclusive, also, of trade guns, fowling-pieces, &c. The ordnance dep ment purchased some land in Banbury-street, Birmingham, on the bank of the canal, and erected a proof house for fire-arms, with an inspecting room, for the purpose of proving, inspecting, and marking, according to the provisions of an act of parliament, all gun-barrels, locks, bayonets, &c., fabricated in the town. This establishment was incorporated by the same act, and consists of the lords-lieutenant of the counties of Warwick, Worcester, and Stafford, the members of parliament for those counties, the high and low bailiffs of Birmingham, the acting magistrates within seven miles, and fifteen individuals connected with the gun manufacture in Birmingham. The building is called the Tower. All pieces are here put to a severe test, after which they are stamped, and may be exposed for sale. A heavy penalty is imposed upon persons who sell any fire-arms without having been proved. Before the close of the late war, no less than 14,500 stand of arms were delivered per week to the ordnance office from the manufactures in this town. Burke pronounced Birmingham the "toyshop of *Europe*," but this designation is hardly to be taken in its literal sense, for the articles of universal utility manufactured here, far exceed those intended for ornament and show. Of the smaller articles of manufacture, pins, small iron-ware, plated goods, jewellery, and toys of all descriptions, are extensively manufactured. At the pin-works, 12,000 pins can be cut and pointed, and 50,000 pin heads made from the wire in an hour. Factories for articles of a larger description are also numerous. Among these are iron and brass founderies, manufactories of steam-engines, machinery of every description, and metallic hot-houses. There are some extensive glass works for the manufacture of crystal, as well as of the coarser kinds of glass.

Birmingham originally consisted of but one parish, that of St Martin, a portion of which was separated in the year 1715, for the erection of the parish of St Philip. Those of St George and St Thomas were formed in 1829. These parishes are all within the archdeaconry of Coventry and diocese of Lichfield and Coventry, and for all civil purposes Birmingham is still considered as one parish.

Among the public buildings of Birmingham, that of the town-hall, recently erected for municipal purposes, for public meetings, and for musical performances, is the most splendid. Its elevation consists of a series of Corinthian pillars resting on a rustic arcade. The internal arrangement of this building exhibits a large saloon or hall, 140 feet in length, sixty-five feet wide clear of the walls, and sixty-five feet high from floor to ceiling, with corridors of communication running along on each side of it on its own level, and staircases leading to upper corridors to give access to galleries. The windows are low, the two tiers being within the height of the basement externally. As the hall is intended principally for musical entertainments, the end of it is occupied by a magnificent organ and surrounding orchestral arrangements. This organ is of enormous dimensions, and has cost [illegible]. Two narrow galleries run along the sides of the hall, and a large deep gallery occupies the lower end; rooms for the accommodation of the performers who may be employed are formed at the upper end of the building and under the orchestra. The building is lengthened externally to 160 feet by the projection of the arcaded pavement in front of Paradise street, over the causeway. The height of the basement above the causeway is twenty-three feet,—the columns resting upon its upper surface or platform are, with their entablature, forty-five feet, and the pediment forming the frontispiece is fifteen feet high,—making a total height of eighty-three feet from the causeway to the acroterium. The columnar ordinance employed is in imitation of the Roman foliated or Corinthian example of the temple of Jupiter Stator; the columns are fluted, and the entablature is greatly enriched, though not to the full and elaborate extent of the original. The structure is of brick, faced with Anglesea marble, of which latter material the columns and their accessories are composed. The bricks were made on the spot of the earth taken out of the foundation. The stones were cut and worked by machinery with steam power, the flutings were made by the same means, and by the application of an invention, it is understood, of one of the contractors. Another ingenious invention, consisting of a species of craning lever-beam on rollers, was applied for the purpose of hoisting the framed tie-beams and principals of the roof from the ground up to the walls. The time given for the completion of the edifice was eighteen months, and the total cost was to be £18,000, though it is understood that the marble used in it has been supplied by the proprietor of the quarries free of cost, for the purpose of bringing the article into public repute. The design for the Birmingham town-hall was supplied by Messrs Hanson and Welsh of Liverpool, who were also the contracting builders for carrying it into execution.

The width of the Birmingham organ, which is perhaps the finest in Europe, is thirty-five feet; the depth fifteen, and the height forty-five. The swell-box, or receptacle for the pipes used for the swell only, is of the size of an ordinary church-organ. The largest central pipe is thirty-five feet long, and rather less than twenty-one inches in diameter; but, of course, the sounding part of this pipe only extends thirty-two feet in length. The foot of this pipe is four feet in length, and weighs not less than 224 lbs. The metal pipes of large dimensions are made entirely of zinc. There are four rows of keys, and one extensive set of pedals, or foot-keys, and five common bellows to give wind to the forest of pipes. In the swell-box a set of bells (*carillons*) has been placed, which appears to be a greater novelty than improvement. By an ingenious mechanical contrivance, it is arranged that all the various stops of the instrument may be combined on any one of the *claviers*, or sets of keys, by which the power of producing grand effects is almost infinitely extended. In this organ there is a reed stop, called the *Posaune* or trombone, which all who are acquainted with the organs of the continent consider to be the most powerful and the richest in tone of any existing. The powerful volume of sound proceeding from this stop is mingled with a mellowness which corrects the unpleasant impression which loudness occasionally produces. The assistance afforded by these pipes to the voices in the choruses cannot easily be estimated by those who have not heard it. It may fairly be stated that, while the *Posaune* renders the most effectual aid in blending the voices into one mass, it adds at least fifty per cent. to their power. This stop alone is sufficient to render the organ remarkable; and much of the superiority of the choral effects at the Birmingham festival, above those produced at the commemoration in Westminster Abbey, is attributed to the power of this splendid stop. The builder of this grand instrument was Mr Hill, of London. The case of the instrument is from a design by Mr Mackenzie, and perfectly harmonizes with the architectural style of the building in which it is placed. It is calculated that the timber alone employed in the construction of this organ would weigh between twenty and thirty tons, while the metal and other materials of the structure would raise the weight of the whole to at least forty tons.

By the reform bill Birmingham was invested with the right of sending two members to parliament. The limits of the borough comprise the parishes of Birmingham and Edgbaston, and the townships of Bordesley, Deritend, and Duddeston with Nechels. The number of houses worth £10 a year within this limit was, in 1831, about 7000, and the total number of houses 30,000.

Birmingham has two roads communicating with the metropolis; one passing through Banbury and Warwick, the distance by which is 119 miles; and the other is the great road from London to Holyhead, which is nine miles shorter. The distance from London to Birmingham in a direct line is 102 miles. Birmingham is in the very centre of the canal system, to which indeed it has been indebted for a great measure of its prosperity. One canal communicates with the Severn, another with the Trent and Mersey, a third line with the Thames; so that the products of its industry can be conveyed in an economical manner to the ports of London, Liverpool, Bristol, and Hull. The railway from London to Birmingham, and from Birmingham to Manchester, recently completed, still further accelerates the activity of Birmingham, and affords increased facilities for intercourse with it. The line passes through Watford and Rugby. Projects are now on foot for extending it as far as Glasgow; and, when this is accomplished, it will form, from the magnitude of the places it connects, the principal thoroughfare of the kingdom. A journey from Glasgow to London will then be performed in eighteen hours.

In 1783, Hutton estimated that there were at that time in Birmingham 209 persons worth £2,500,000, viz. :—

3	persons,	each	possessing	£100,000
7	—	—	—	50,000
8	—	—	—	30,000
17	—	—	—	20,000
80	—	—	—	10,000
94	—	—	—	5,000

In 1828, Mr James Luckcock made a calculation of the wealth of the town, which he estimated at £10,000,000 viz. :—

1	person	possessing		£400,000
2	—	—	(each)	300,000
2	—	—	—	200,000
4	—	—	—	150,000
5	—	—	—	100,000
6	—	—	—	80,000
10	—	—	—	60,000
20	—	—	—	30,000
30	—	—	—	20,000
50	—	—	—	15,000
70	—	—	—	10,000
100	—	—	—	5,000
200	—	—	—	2,000
400	—	—	—	1,000
1000	—	—	—	200
2000	—	—	—	250
3000	—	—	—	100
4000	—	—	—	50
5000	—	—	—	25
6000	—	—	—	15

In 1801 the population of Birmingham and the suburbs was 73,670, and it was only exceeded in this respect by Manchester, Glasgow, and Liverpool. In 1811 the population of Birmingham had increased to 85,753; in 1821 to 106,721. At the census taken in May, 1831, Birmingham contained 69,415 males and 72,836 females, making a total population of 142,251. It still held the rank which it occupied when the census of 1801 was taken; and though it had not increased in so rapid a manner, its progress had been more steady. From 1801 to 1811 the increase was 16 per cent., and for the two following decennial periods it was twenty-four and thirty-three per cent. respectively. The following is a table of the number of baptisms, burials, and marriages registered in Birmingham in the ten years ending in 1830:—

Years.	Baptisms.	Burials.	Marriages.
1821	[illegible]	1773	[illegible]
1822	3023	1764	[illegible]
1823	2790	1943	[illegible]
1824	3058	2178	[illegible]
1825	3283	2343	[illegible]
1826	2777	[illegible]	[illegible]
1827	3568	2044	[illegible]
1828	4749	[illegible]	[illegible]
1829	4313	1941	[illegible]
1830	4472	[illegible]	[illegible]

The number of persons who died above the age of ninety-five during the above ten years was forty-eight, of whom there were eleven aged ninety-eight; six aged a hundred; four 101; two 102, four 103; two 104; one 109; and one aged 114. The rate of mortality among children under five years is 44 per cent., i. e. less than one-half, and somewhat fewer than in the towns of Liverpool, Nottingham, and Leeds, where the proportion per cent. is respectively as follows:—Liverpool, [illegible] per cent.; Nottingham, 48 per cent.; and Leeds, [illegible] per cent. The longevity of the inhabitants is remarkable, as will be seen by the following statement:—Proportion of deaths per cent., from [illegible] to 1830, of persons aged between ninety and ninety-nine:—Birmingham, 90 per cent.; Hull, 96; Halifax, 98; Somersetshire, 96; Dorsetshire, [illegible]. The longevity of the inhabitants of Birmingham exceeds even that of the county population, the proportion in the latter case being 95 per cent., and at Birmingham 90.

In December, 1837, when the registration act had been exactly six months in operation, the population of the parish of Birmingham amounted to 145,800. The number of births within the period was 1582, and of deaths, 1456. Mr Pare, the superintendant registrar of the Birmingham district, has given tables showing the age of each individual at the time of death, and the diseases or causes of death. Both these points are of the utmost importance, and are safe guides in estimating the habits and condition of any particular section of the population. In Mr Pare's tables, [illegible] deaths are attributed to consumption; [illegible] to inflammatory complaints; 89 to small pox; [illegible] to decay of nature or old age; 79 to fever; [illegible] to convulsions; 67 to dropsy; 44 are violent deaths; and the ravages of each type of disease are similarly discriminated. The number of children who died under the age of three months was [illegible]; and under one year 366, which is one-fourth of the whole number of deaths. Mr Pare has not been content with instituting comparisons between his own district and the general results which the census of 1831 present, but has obtained from the registrar, Dr Johns, of Manchester, a statement of the movement of the population in that district between the 1st of July and the 31st of December last. With these materials before him, which, as far as regards the number of deaths may be [illegible] depended upon, Mr Pare has drawn the following interesting points of comparison between Manchester and Birmingham:—1. In Birmingham *one-fourth* of the whole number of deaths take place within the year, whilst in Manchester upwards of *one-third* die within the same age. 2. In Birmingham *three-sevenths*, and in Manchester *four-sevenths*, of the whole number of deaths take place within the fifth year. 3. In Birmingham one-half the population attain their *sixteenth* year, whilst in Manchester one-half the population die within the first *three* years. 4. In Birmingham twice as many people *survive* the age of *seventy* as in an equal population in Manchester. 5. From these several comparisons it appears that the value of human life is much greater in Birmingham than in Manchester, arising in part, no doubt, from the superiority of its geographical position, but mainly from the superior nature of the employments, and better habits of its work-people. As to the diseases or causes of death, Mr Pare shows that by far the largest number of deaths are occasioned by consumption in both towns, being about equal in each, in proportion to the population, or nearly *one-fourth* of the whole number.

BIRNIE, Sir Richard, Knight, chief magistrate of the public office in Bow Street, was a native of Banff, in Scotland, and was born of comparatively humble but respectable parents. He was bred to the trade of a saddler, and, after serving his apprenticeship, came to London, and obtained a situation as journeyman at the house of Mackintosh and Co., who were then saddle and harness makers to the royal family, in the Haymarket. He soon recommended himself to the favourable notice of his employers by his application and industry. His subsequent advancement in life, however, may be attributed in some degree to accident. The foreman, as well as the senior partner in the firm, being absent from illness at the same time, and a command being received from his royal highness the prince of Wales for some one to attend him to take orders to a considerable extent on some remarkable occasion, young Birnie was directed to attend his royal highness. The orders of the prince were executed so completely to his satisfaction, that he often afterwards, on similar occasions, desired that the "young Scotchman" might be sent to him. At that period, Sir Richard was the occupant of a furnished apartment in Whitcomb Street, Haymarket. By the exercise of the diligence, perseverance, and honesty, for which so many of his countrymen have been remarkable, he at length became foreman of the establishment of the Messrs Mackintosh, and eventually a partner in the firm. During the progress of these events he became acquainted with the present Lady Birnie, the daughter of an opulent baker in Oxendon Street, and married her, receiving in her right a considerable sum in cash, and a cottage and some valuable land at Acton, Middlesex. He then became a housekeeper in St Martin's parish, and soon distinguished himself by his activity in parochial affairs. He served successively, as he has often been heard to state with exultation, every parochial office, except those of watchman and beadle. During the troublesome times of the latter part of [illegible] administration he was a warm loyalist, and [illegible] proof of his devotion to the "good cause," by enrolling himself as a private in the Royal Westminster Volunteers, in which corps, however, he soon obtained the rank of captain.

After serving the offices of constable, overseer, auditor, &c., in the parish, he became, in the year 1805, churchwarden; and in conjunction with Mr Elam, a silver smith in the Strand, his co-churchwarden, and Dr Anthony Hamilton, the then vicar of St Martin's parish, founded the establishment, on a liberal scale, of a number of alms-houses, together with a chapel, called St Martin's Chapel, for decayed parishioners, in Pratt Street, Camden Town, an extensive burying ground being attached thereto. St Martin's parish being governed by a local Act of Parliament, two resident magistrates are necessary; and Mr Birnie was, at the special request of the late Duke of Northumberland, placed in the commission of the peace. From this time, he betook himself to frequent attendances at Bow Street office, and the study of penal statutes and magisterial practice in general. He was in the habit of sitting in the absence of Sir Richard Ford, Mr Graham, and other stipendiary magistrates of the day, and was considered an excellent assistant. He was at length appointed police magistrate at Union Hall, and, after some few years' service there, was removed to Bow Street Office, to a seat on the bench, to which he had long most earnestly aspired. In February, 1820, he headed the peace-officers and military in the apprehension of the celebrated Cato Street gang of conspirators. Sir Nathaniel Conant, the chief magistrate, died shortly after, and Mr Birnie was greatly chagrined at the appointment of Sir Robert Baker, of Marlborough Street, to the vacant office, saying, to a brother magistrate publicly on the bench, the tears starting from his eyes, "This is the reward a man gets for risking his life in the service of his country!" He soon afterwards, however, attained what might be fairly said to be the summit of his ambition. In August, 1821, at the funeral of Queen Caroline, Sir Robert Baker having declined reading the Riot act, which Mr Birnie deemed necessary, in consequence of the disposition which the mob evinced to riot, Mr Birnie took the responsibility on himself, and read it. Sir Robert retired from the chair immediately afterwards, having given great offence to the ministry by his want of decision; and Mr Birnie was appointed to the office of chief magistrate, and had the honour of knighthood conferred upon him on the 17th of September following. Sir Richard was an especial favourite with George IV. He was ever ready to assist the needy, especially where he discovered a disposition to industry. In all matters of importance connected with the peace and welfare of the metropolis, it was the custom of those who filled the highest offices in the state to consult him. He was always remarkable for his close application to business. He died on the 29th April, 1832, aged seventy-two. Sir Richard left a son and two daughters.

BLACKBURN; a large market-town of England, in the county of Lancaster, 208 miles N. W. from London, thirty S. E. from Lancaster, and twenty-three NN.W. from Manchester. It stands on a small stream anciently called *Blakeburn*, i. e. yellow stream; and is sheltered by hills stretching from the N. E. to the N. W. The country around is a barren sandy flat, which, however, has been much improved by cultivation. It has been a market-town since the reign of Elizabeth. The streets are very irregularly built, partly owing to the intermixture of glebe and other lands; but they contain many good houses, and are paved, lighted with gas, and watched under the provisions of an act of parliament. There is a good supply of water. A theatre was erected here in 1818, and there are assembly-rooms, and a subscription library. The manufacture of cotton is the principal business of the place. James Hargrave, who made some important improvements on the spinning machinery, was a carpenter of Blackburn. The trade is facilitated by the Leeds and Liverpool canal, which passes near the town, affording communication with an extensive line of inland navigation, and with the rivers Mersey, Dee, Ouse, Trent, Humber, Severn, and Thames. Population of the town in 1831, 27,091.

The *parish* of Blackburn is fourteen miles long by ten broad. It contains 59,701 inhabitants, and comprises twenty-three townships, viz., the market-town of Blackburn, and the townships of Balderston, Billington, Great Harwood, Over Darwen, Salisbury, Samlesbury, Tock-holes, Walton-le-dale, Clayton-le-dale, Cuerdale, Lower Darwen, Dinkley, Eccleshill, Little Harwood, Livesley, Mellor, Osbaldeston, Pleasington, Ramsgrave, Rishton, Wilpshire, and Witton. Under the reform act, Blackburn returns two members to parliament. The number of electors is between six and seven hundred.

BLACKHEATH; an elevated heath in the vicinity of London, in the county of Kent, from various parts of which there are fine views of Greenwich hospital, Greenwich park, the river Thames, and London in the distance. On this heath and its vicinity there are many handsome villas, and residences of the nobility and gentry. Among these are the villas of the princess Sophia, Lord Lyttleton, the duke of Buccleugh, the earl of Dartmouth, &c. The finest building on the heath was the splendid mansion of Sir Gregory Page, which was sold by auction to various purchasers, and rased to the ground. Its site is now occupied by a number of cottages. Here are two episcopal chapels, the one in the parish of Lewisham, and the other in an extra-parochial place called Kidbrook. There are several schools here. From its vicinity to London, Blackheath has been the scene of some memorable transactions. In the reign of Richard II., the insurgents under Wat Tyler assembled here, as did Jack Cade and his followers in 1451. Foreign ambassadors have been met here in great pomp, and the corporation of London received Henry V. at this place on his return from the battle of Agincourt. The Cornish rebels under Lord Audley were met here, and vanquished by Henry VII., in 1497.—In the immediate vicinity of the heath, towards Deptford, a cavern consisting of several chambers has been discovered. Its use has not been ascertained, but it is supposed to have been intended as a retreat during the struggles of the Danes and Saxons.

BLACKWOOD, William, an eminent bookseller in Edinburgh, the projector, and for many years the conductor, of the popular magazine which bears his name, was born in Edinburgh, on the 20th of November, 1776. Although his parents were in a much humbler station of life than that which he himself ultimately occupied, he received an excellent early education; and it was his boyish devotion to literature which determined the choice of his calling. In 1790, when he was fourteen years of age, he entered on his apprenticeship with the well-known house of Bell and Bradfute; and, before quitting their roof, largely stored his mind with reading of all sorts, but especially Scottish history and antiquities. When he had been six years with Messrs. Bell and Bradfute, he went to Glasgow to be manager for Mr Mundell, then in extensive business as a bookseller and university printer. Mr Blackwood had the sole superintendence of the bookselling department; and he always spoke of the time he spent in Glasgow as having been of the greatest service to him in after-life. Being thrown entirely on his own resources, he then formed those habits of decision and promptitude for which he was subsequently so remarkable. He also corresponded regularly with Mr Mundell and his friends at home,—a usage from which he derived great benefit in the formation of that style of letter-writing, which, in the opinion of many competent judges, has seldom been surpassed. Mr Mundell, however, gave up business in Glasgow; and, at the expiration of a year, Mr Blackwood returned to Messrs. Bell and Bradfute. In 1799, he entered into partnership with a Mr Ross, which connection was, however, dissolved in a few years. He then went to London; and, in the shop of Mr Cuthell, perfected himself in the knowledge of old books.

In 1804, Mr. Blackwood returned to Edinburgh, and commenced business on his own account, on the South Bridge, as a dealer in old books, in the knowledge of which he had by that time few equals. He soon after became agent for Murray, Baldwin, and Cadell, and also published on his own account among other works "Grahame's Sabbath," "Kerr's Voyages," the "Edinburgh Encyclopedia," &c. In 1812 appeared his famous catalogue consisting of upwards of fifteen thousand books in various languages, all classified. For many years Mr Blackwood confined his attention principally to the classical and antiquarian branches of his trade, and was regarded as one of the best-informed booksellers of that class in the kingdom; but on removing to the New Town of Edinburgh, in 1816, he disposed of his stock, and thenceforth applied himself, with characteristic ardour, to general literature, and the business of a popular publisher.

In April 1817, he put forth the first number of "Blackwood's Magazine," the most important feature of his professional career. He had long before contemplated the possibility of once more raising magazine literature to a rank not altogether unworthy of the great names which had been enlisted in its service in a preceding age: it was no sudden or fortuitous suggestion which prompted him to take up the enterprise in which he was afterwards so pre-eminently successful as to command many honourable imitators. From an early period of its progress, his magazine engrossed a very large share of his time; and though he scarcely ever wrote for its pages himself, the general management and arrangement of it, with the very extensive literary correspondence which that involved, and the constant superintendence of the press, would have been more than enough to occupy entirely any man but one of first-rate energies. No man ever conducted business of all sorts in a more direct and manly manner. His opinion was on all occasions distinctly expressed; his questions were ever explicit; his answers conclusive. His sincerity might sometimes be considered rough: but no human being ever accused him either of flattering or of shuffling; and those men of letters who were in frequent communication with him soon conceived a respect for and confidence in him, which, save in a very few instances, ripened into cordial regard and friendship. The masculine steadiness and imperturbable [illegible]tion of his character were impressed on all his pu ceedings; and it will be allowed by those who watched him through his career, as the publisher of a literary and political miscellany, that those qualities were more than once very severely tested. He dealt by parties exactly as he did by individuals. Whether his principles were right or wrong, they were *his*, and he never compromised or complimented away one tittle of them. No changes, either of men or of measures, ever dimmed his eye, or checked his courage. To youthful merit he was a ready and a generous friend; and to literary persons of good moral character, when involved in pecuniary distress, he delighted to extend a bountiful hand. He was in all respects a man of large and liberal heart and temper.

During some of the best years of his life he found time, in the midst of his own pressing business, to take rather a prominent part in the affairs of the city of Edinburgh, as a magistrate; and it must be admitted by those who most closely observed, and even by those who most constantly opposed him in that capacity, that he exhibited, on all occasions, perfect fairness of purpose, and often, in the conduct of debate, and the management of less vigorous minds, a very rare degree of tact and sagacity. His complete personal exemption from the slightest suspicion of jobbing or manœuvring was acknowledged on all hands; and, as the civic records can show, the most determined enemy of what was called *reform* was, in his sphere, the unwearied, though not always the triumphant, assailant of practical mischiefs.

Mr Blackwood died at his house in Ainslie Place, Edinburgh, on Tuesday the 16th of September, 1834, in the fifty-eighth year of his age. His two eldest sons continue the bookselling business.

BLAIR ATHOLE; a parish in Perthshire, Scotland, about thirty miles in length and eighteen in breadth. The district is very rugged and bleak in the mountainous parts, but very beautiful in that part which is more properly *Blair* Athole—namely, the valley around Athole house, which is situated on the bank of the Tilt, near its confluence with the Garry.—(See *Athole* in Encyclopedia.) The view of the country from the opening of the Pass of Killiecranky is one of the finest in Scotland, comprising a striking variety of mountain and valley. The village of Blair-Athole stands to the north of Athole house, on the road from Edinburgh to Fort Augustus, from which a road diverges at this point to Brae-Mar. It is twenty miles north of Dunkeld. In the church of Blair-Athole lie the remains of John Graham of Claverhouse, Viscount Dundee, who fell at the battle of Killiecranky, July 26, 1689.—Population in 1821, 2493; in 1831, 2779.

BLANCHARD, William, an eminent comedian, was a native of York, where he was brought up by an uncle, the printer of one of the newspapers, who apprenticed him to the same business. At the age of seventeen, however, he left home to join a company of comedians at Buxton, in Derbyshire, then under the management of Mr Welsh. He made his debût under the assumed name of Bentley, in the part of *Allen a Dale*, in "Robin Hood," and a favourable reception induced him to pursue his theatrical career. His success continuing, he was induced after a year or two to appear in his proper name, and performed some of the most [illegible] tragic characters, as Romeo, Young Norval, Barnwell, &c. When he had attained the age of twenty, he became a manager on his own account, and opened theatres at Penrith in Cumberland, Hexham in Northumberland, and Barnard Castle, and Bishop's Auckland in Durham. After a few seasons he relinquished management, a poorer man than when he commenced. In 1793, he was engaged by Mr Brunton, for the Norwich company; in which he had abundant opportunities for the display of his talents. In particular his performance of rustic characters, old men, smart servants, sailors, &c. obtained him applause, and rendered him an established favourite throughout that circuit. His increasing reputation attracted the attention of the managers of Covent Garden, who at once engaged him for five years, commencing with the season of 1800. On the 1st of Oct. he made his first bow to a London audience, in the characters of *Acres* in "The Rivals" and *Crack* in "The Turnpike-gate." His correct delineation of the numerous characters which he successively assumed in play, farce, and opera, made him a universal favourite. His Fluellen, Menenius, Polonius, Pistol, Sir Andrew Aguecheek, Sir Hugh Evans, and many others, were evidences of the soundness of his judgment and versatility of his talents. He died at Chelsea, 9th May, 1835, aged 66.

BLANE, Sir Gilbert, of Blanefield, Ayrshire, and Culverlands, Berkshire, Bart. M. D., Physician in Ordinary to the King, Fellow of the College of physicians and of the Royal societies of London and Edinburgh, Member of the Imperial Society of Sciences at St Petersburg, &c. was the fourth son of a family of opulent Scottish merchants, one of whom, Thomas, was some time settled in London; and William, junior to Sir Gilbert, purchased the estate of Wingfield Park, Berks. Sir Gilbert was born at Blanefield, Ayrshire, Aug. 29, (O. S.) 1749. He commenced life as a navy surgeon, and was present at the engagement between the English and French fleets in the West Indies, on the 12th of April, 1782, of which he wrote an account—we believe his first published work. He shortly after published a valuable work, entitled "Observations on the Diseases incident to Seamen." He rose gradually in his profession, until he attained the rank of physician to the fleet, and was honoured with the acquaintance and friendship of his late Majesty. In 1788 he was selected to deliver the Croonian lecture, on muscular motion, before the Royal Society, which lecture was published in 1790. We also find in their transactions, vol. 80., an account by him of the Nardus Indica or spikenard; in which paper he attempted to collect what was known by the ancients respecting this odoriferous herb. His ideas respecting medical education, and certain topics connected with it, he gave to the world in 1819, under the title of "Medical Logic," and the work has run through several editions. In 1822, he published "Select Dissertations on several Subjects of Medical Science," most of which, we believe, had before appeared as separate papers in some of the medical periodicals. For some time he had retired from public life, when we find him once more coming forward in 1831, and addressing his "Warning to the British Public against the alarming Approach of the Indian Cholera." These, with some pamphlets on subjects of ephemeral interest, and contributions to medical periodicals, constitute, we believe, the whole of his literary labours. Sir Gilbert Blane was for some time physician to St Thomas's Hospital; and having been appointed successively physician to the household, and one of the physicians in ordinary to his late Majesty, was created a Baronet by patent, dated Dec. 26, 1812. In Nov. 1829, with the sanction of the lords of the admiralty, he founded a prize medal for the best journal kept by the surgeons of his Majesty's navy. The medal is awarded every second year, the commissioners selecting four journals.—Sir Gilbert during his life, and thenceforth the president of the college of physicians, and the president of the college of surgeons, deciding which of such four is best entitled to this honorary distinction. This judicious institution is calculated to excite considerable emulation in the medical departments of the navy; and, by bringing the journals from time to time before the notice of the board, insure to the most deserving the promotion which, in this most important branch of the public service, is, or ought to be, given only to merit. He married, July 11, 1786, Elizabeth, only daughter of Abraham Gardner, merchant; and by that lady, who died on the 9th of July 1832, he had six sons and three daughters. He himself died on the 27th June 1834, aged 85. His eldest son, Gilbert Gardner Blane, Esq., died in February 1833, aged 45. His second son, Lieut. George Rodney Blane, of the Bengal engineers, died on the 18th of May 1821. His successor in the title, the present Sir Hugh Seymour Blane, served with distinction at Waterloo, as an officer of the 3d guards. He is married, and has issue. Sir Gilbert has left one other son, Charles Collins. His daughter Louisa was accidentally drowned in a piece of water on her uncle's estate at Winkfield park, Aug. 24, 1813, aged 19. The others died in infancy.

BLARNEY; a village in the county of Cork, five miles from the city of Cork, containing by the last census 417 inhabitants. The castle of Blarney was built in the 15th century. It was purchased in 1701 by Sir James Jefferys, governor of Cork, who soon after erected a large and handsome house in front of it, which was the family residence for many years, but is now a ruin. The "Groves of Blarney," celebrated in Irish song, are of considerable extent, and very interesting. In the highest part of Blarney castle, is a stone usually pointed out to the visitor, which is said to have the power of imparting to the person who kisses it the privilege of hazarding, without a blush, that species of romantic assertion which many term falsehood. Hence the phrase of blarney, applied to such violations of accuracy in narration.

BLIND. (*a.*) The effects of blindness upon the physical man, whatever they may be upon the intellectual, are decidedly pernicious; not directly and necessarily, but, nevertheless, almost inevitably. The mind is not called into action, the muscular power is not developed by exercise and labour, the sufferer dares not run about and play with his comrades; he cannot work in the open air, nor get the healthful movement which is necessary to bring the frame to the temper that will enable it to wear well in after life; and it consequently soon wears out. Hence we see so many of the blind, who were comparatively intelligent and active in childhood, gradually drooping through youth into premature old age; becoming first inactive, then stupid, then idiotic, and finally going down to an early grave with the light of intellect completely extinguished, and enveloped in both physical and intellectual darkness. This is purely the effect of physical inaction; and this inaction always must have this effect: hence so few strong men are found among the blind,—hence so many weak and helpless ones. The development of some of the particular powers seems also to be affected by blindness: this is particularly observable in regard to the sexual propensity, which, while it is particularly strong in the deaf, is weak in the blind; and for the very obvious reason that the imagination is fed in the one case by the sight, and in the other is not. The same principle which causes the physical inability of the blind, contributes mainly to the perfection of the senses which they possess, for these are called into strong and continual action. The touch, the hearing, and the smell of the blind, sometimes become so acute that they differ as widely from the same senses in the state in which we possess them, as does the scent of the spaniel from that of the grayhound.

It is a popular, but unphilosophical saying, that when "we are of one sense bereft, it but retires into the rest." The blind man does not hear any better, merely because he has not the sense of sight; but because his peculiar situation and wants oblige him to cultivate his ear; just as the sailor acquires a power of descrying vessels at a distance, which is unattainable by the eye of a landsman. The hearing is the sense which seems to us the most changed in the blind, although we are aware that many people, and even many of the blind themselves, say it is the touch. May we not, however, call all the senses mere modifications of the sense of touch? What is *touch?* Lexicographers call it the sense of feeling; now this sense of feeling is inherent in a greater or less degree in every part of the surface of the body; in the lips it is very acute, in the ear it is still more so, and the undulations of the air, striking upon the apparatus of hearing, are felt, just as the pressure of a hard substance is by the rest of the body. Is not the power of vision, too, dependent on the touch? The rays of light strike upon the retina, and we *feel* colour. The taste is decidedly a modification of touch, and the power of distinguishing the physical qualities of bodies by the lips and tongue is very striking in the blind. People are not generally aware of the powers of the ear: blind men, for instance, have been known, who could not only ascertain the shape and dimensions of an apartment by the sound of their voice, but who could, on entering one with which they were familiar, tell by striking their cane on the floor, and listening to the echo, whether any of the large articles of furniture had been removed from it, or shifted from their usual places. What seeing person would think it possible with his eyes bandaged, to tell which was the tallest, and which was the shortest of a [illegible] of speakers, merely by the direction in which the sound came from their mouths to his ear? Yet many blind persons can not only do this, but [illegible] ascertain very nearly the ages of the [illegible]. There is no doubt that the voice is changed with every changing year; we seize only upon the extremes of the chain; we can tell the [illegible] of the child, from the rough firm voice of [illegible] and the trembling tones of old age; but [illegible] these,—besides the difference in the volume [illegible] pitch which exists between the voices of different persons, there is another produced by the [illegible] years; and time stamps his impress upon the [illegible] as surely as upon the face. The blind [illegible] these by his practised ear, and not only can [illegible]tain with tolerable correctness the age of the speaker, but pronounce upon his height, [illegible]sions of his chest, and so forth. Nor is this [illegible] most extraordinary part of the discriminating power of some blind men, who seize upon the slight variations of the intonation of the voice, as we do upon the changes of the countenance, and judge by them of what is passing in the mind of the speaker. We all of us wear at times a mask upon the countenance, and draw the curtain of hypocrisy over this window of the soul, to conceal what is going on within; but we seldom think of the voice; and it is upon this that the blind man seizes, as upon a thread, to direct him to the seat of the passions. Hence it is, that some of them can ascertain on so short an acquaintance the disposition and character of persons: they are not imposed on by the splendour of dress, they are not prejudiced by an ungainly air, they are not won by a smile, nor are they dazzled by the blaze of beauty or led captive, as many are wont to be, by the fascination of a lovely eye. The voice is to them the criterion of beauty, and when its melodious tones come forcibly stamped with sincerity from the soul, their imaginations at once give to the speaker a graceful form, and a beautiful face. It is recorded of the father of Fletcher the novelist, that he was long continued in the post of judge in the police court of London, after he became blind; and that he knew the voices of more than three thousand of the light-fingered gentry, and could recognise them at once when brought in.

The ear of some animals is surprisingly acute, and there is no doubt that it is improved by blindness; we know of a horse who, after becoming blind, evidently had his hearing very much sharpened, for when feeding in the pasture with others, far from the road, he would hear the sound of hoofs, and raise his head and whinny out his salute long before his companions betrayed any consciousness of the approach of the passing stranger. So with the blind man, when he is walking along the street he can tell whether it is wide or narrow, whether the houses are high or low, whether an opening which he may be passing is a court closed up at the end, or whether it has an outlet to another street; and he can tell by the sound of his footsteps in what lane, or court, or square he is. He goes along boldly, seeming to see with his ears, and to have landmarks in the air. The accuracy of the ear gives to blind persons a very great advantage in music; they depend entirely upon it; and hence they harmonize so well together, and keep such perfect accord in time, that Paganini, after listening to some pieces performed by pupils of the institution for the blind in Paris, declared that he never before had an adequate notion of what harmony was.

The touch is capable of being equally perfected, and many remarkable instances are given of this. Saunderson, the blind professor of mathematics in the university of Cambridge, became such a connoisseur of ancient coins, that he could detect the modern counterfeits, even when good eyes were puzzled about them. There lived a few years ago a blind man in Austria, who executed very good busts by feeling the faces of persons, and imitating them; and there is now a bust of the late emperor, executed by this blind man, and preserved in the museum in Vienna, which is considered a very good likeness. Persons who have witnessed exhibitions at the institutions for the blind, have been surprised at the ease and fluency with which they can read books printed in raised letters, by passing the fingers rapidly over them: this, however, is by no means so extraordinary as many other instances which are notorious, though not well understood. A blind man, for instance, when walking in a perfect calm, can ascertain the proximity of objects by the feeling of the atmosphere upon his face; it would seem at first that the echo given back, were it only from his breathing, might be sensible to his ear; but we have ascertained by experiment, that a blind man with his ears stopped, could tell when any large object was close to his face, even when it was approached so slowly as not to cause any sensible current of air.

It is a common supposition that the blind can distinguish colours, but we are convinced that this is impossible; all the blind, whom we have consulted on the subject, have replied that they had no such power, and they did not believe that any blind person ever had it. Indeed what tangible quality can there be in a substance so etherial, that it passes unobstructed through dense glass? There was an instance of a girl in England, who was generally believed to have this power; and the trials and tests which she successfully underwent somewhat puzzled us, until an explanation of the difficulty offered itself in the chemical properties of the different coloured rays of light. She could ascertain the colours of different pieces of cloth by applying them to her lips in succession; and she must have learned that some colours radiate heat more rapidly than others, so that she could tell white from black by the different degree of warmth which it imparted to her lips. This is perhaps one of the most extraordinary instances of nicety of touch which can be quoted. The same girl used to astonish incredulous visitors by reading the large letters of the maker's name, written in their hats, while they held them behind her back.

There is hardly a subject in the whole range of science, which may not be mastered without the aid of the sight; this fact, if it be not deducible from a consideration of the nature of the senses, may be established by numerous instances in history of blind men having raising themselves to eminence in various professions. How little do men in general learn by the sight, that they could not learn without it? How vast and varied is the knowledge of some men, who seldom go beyond the bounds of the city in which they were born, and whose knowledge is obtained from books! But cannot the same knowledge be obtained by hearing books read by another? Nay! does not the mind grasp it more firmly, and hold it more tenaciously? The very facility with which we can glance over a page, and the ease with which we can refer to it, causes us to be negligent and inattentive; the eye often travels listlessly over sentences, while the mind is travelling elsewhere; and sometimes, even when performing two simultaneous operations of reading and repeating aloud, we may be thinking of something else. But the blind man has the greatest inducement to attention; he knows that he cannot refer to the passages he hears, and he therefore arranges and stores them away in his mind with the greatest order, and can refer to them with ease. The knowledge which we obtain from books, however, will not be long beyond the reach of the blind man, since ingenuity is fast bringing to perfection a system of printing for his use, of which we shall speak by and by; but even if it were so, there is a still more vast and valuable mine of knowledge which is to be explored by conversation and intercourse with the world; and to this the blind man has free access: there are a great many shrewd and intelligent men in the world who are as blind to books, as he is, and who can hardly sign their names.

How did Malte Brun acquire his knowledge of the geography of the countries about which he wrote so fully and so well,—was it by visiting them? No! it was by a process of study which he might have followed as thoroughly, though not quite so easily, had he been deprived of sight. How do we learn the geography, the history, the language, the manners and customs of different countries which we never saw,—is it not by means which are perfectly within the reach of a blind man, provided the necessary pains are taken with him? In mathematics, do we not close our eyes, the more completely to shut out external impressions, and the more intensely to bend our faculties to the contemplation of the question? And in every mathematical calculation whatever, has not the blind man an immense advantage over us, provided he be furnished with the means of putting down his results in a manner to be read by himself? Now we shall see that such means are provided for him, and that he can go through arithmetical and algebraical calculations with greater ease than seeing persons. All kinds of problems may also be solved by the blind, since tangible diagrams can be prepared for them.

The languages, the classics, the long range of history, the wide field of letters, are all open to the blind man: we see no obstacle at all in the way of his becoming an able counsellor at law, or occupying the pulpit with ability and advantage. As for music, and her sister poetry, it would be an idle waste of words to try to prove that the blind can become their successful votaries,—for there stand a long array of sightless bards, headed by the "blind old man of Scio's rocky isle," whose verse has charmed every age, and been repeated in every tongue. In music, the names of Stanley, Gautier and Chauvain are already conspicuous.

But, after all, the best argument in favour of the capacity of the blind for receiving a high degree of education is to be found in the number of those who have raised themselves to eminence. Ancient history abounds with them; the names of Didymus of Alexandria, Eusebius and Aufidius are well known; and Diodotus, the master of Cicero, who lost his sight, still pursued his studies with great success. Achmed Ben Soliman, one of the most beautiful Arabian writers and poets, was blind from his infancy. But we need not go back to distant ages to find examples of men who have raised themselves to eminence, in spite of the obstacles which nature has placed in their way. Sanderson, the professor of mathematics, lost his sight in infancy. He published a volume called the Elements of Algebra, an extraordinary work, filled with singular demonstrations which a seeing person would not perhaps have hit upon. But the most wonderful of Sanderson's performances were his dissertations upon optics, light and colours, with which he used to delight and astonish his audience. The Rev. Dr Blacklock, too, gave extraordinary proofs of the power and correctness of the imagination, for though he never saw the light, he has left us some most beautiful delineations of nature, in the volumes of poems which he published: as in his Wish,

> On rising ground the prospect to command,
> Untinged with smoke, where vernal breezes blow,
> In rural neatness let my cottage stand;
> Here wave a wood, and there a river flow.
> Oft from the neighbouring hills and pastures near
> Let sheep with tender bleat salute my ear. &c

And again,—

> Let long lived pansies here their scents bestow,
> The violet languish and the roses glow,
> In yellow glory let the crocus shine,
> Narcissus here his love-sick head recline,
> Here hyacinths in purple sweetness rise,
> And tulips, tinged with beauty's fairest dyes.

Contemporary with Blacklock was Dr Henry Moyes, the eloquent professor of philosophical chemistry in Manchester. Though he lost his sight in early infancy, he made rapid progress in different sciences; he acquired not only the fundamental principles of physics, music, and languages, but he plunged deeply into the most abstract sciences, and displayed a minute knowledge of geometry, of optics, of algebra, of astronomy, of chemistry, and in a word, of most of the branches of the Newtonian philosophy. Every time he entered into society, he first passed some minutes in silence: the sound enabled him to judge of the dimensions of the apartment, and the different voices of the number of persons present. His calculations in this respect were very exact, and his memory was so faithful that he was seldom mistaken. He has been known to recognise a person the instant he heard him speak, although more than two years had elapsed since they had met. He could ascertain with precision the stature of persons by the direction of their voices; and he made tolerable hits at their character and dispositions by the tone of their conversation.

The instances now quoted are but a small portion of those which may be adduced in favour of the facility of giving to the blind an education. These were men who were endowed with genius, but great as were their powers, their minds would have been left in darkness as total as their bodies, had they not been fortunate enough to possess friends of a philosophic turn of mind, whose affections prompted them to great efforts to overcome the obstacle of blindness. The zeal of the subjects more than requited them.

One example may be adduced of astonishing powers of another kind, in a blind man, who was entirely neglected in his youth: it is that of John Metcalf, about whom ample evidence and information may be obtained from the transactions of the Philosophical Society of Manchester, and from the Memoir of Mr Bew. Metcalf was a native of Derbyshire, and he early became so well acquainted with the roads, that he took up the trade of a teamster, driving his cart from one place to another. During very dark nights, he used to act as guide to those who had eyes, but could not see: in this, however, he was not entirely singular, for there is a well known instance of a blind guide in Switzerland. But Metcalf gradually rose in the world, and having acquired a most exact knowledge of the situation, size and shape of every hill, rock, and tree about the peak, he undertook to correct the direction of the routes; and having, by the help of a compass, laid out several plans, which were adopted,—he took up the business of a surveyor. Mr Bew says, he is now occupied in projecting and laying out roads in mountainous and almost inaccessible districts. I have often met him with a long pole in his hand, crossing roads, clambering precipices, descending into valleys, and feeling [illegible] their different dimensions, their forms and situations, so as to be able to make out his designs [illegible] correctly. He makes his plans, and estimates by a peculiar process which he cannot communicate; nevertheless, his talent is so decided, that he constantly finds occupation. Most of the routes on the Peaks of Derbyshire have been changed in consequence of his suggestions, principally those in the neighbourhood of Buxton.

The blind have been considered in all ages as of necessity cut off from participation in the business and pleasures of life; they have been made the *paria* of society,—and although the hand of charity has ever been open to their cry,—yet men have shrunk from an attentive examination of their situation. They have often been accused of a disposition to atheism,—but we think without sufficient reason: surely the increased sense of dependence must be conducive to a feeling of reverential awe for a Power, about whom the imagination is ever busy. That many eminent blind men have been *atheists*, is certain; but it is certain too, that their scepticism arose in a great measure from the improper light in which they have been regarded. The dying Sanderson said to his clergyman, "you talk to me of the wonders of creation, but how often have I heard you express your wonder at my performing things which are to me perfectly simple; how then do I know that your wonder is more reasonable in the one case, than in the other?" With regard to what are called feelings of modesty,—the blind possess them in a very high degree, the speculations of Diderot and others to the contrary notwithstanding; they are from their situation led to be particularly scrupulous in their regard to *les convenances* of society. They are exceeding orderly as well in the arrangement of their ideas as of their property; hence, perhaps, their horror of theft, and their respect for the property of others. The method of classification which they adopt, enables them to bring the memory to a very high degree of perfection; hence the astonishing instances which we have of blind men retaining several thousand words, without meaning, and without connection. It is related of Dr Moyes, that he would recognise by their voice, persons with whom he had had but a slight acquaintance, and whom he had not met for more than a year.

The want of sight makes the blind insensible to the infinite variety of beauteous aspects which nature puts on, when she comes forth blushing with the hues of morn, or arrays herself in the silver mantle of moonlight, or decks herself out in the gorgeous robes of sunset. If, then, all the grandeur and glory of nature are lost upon them, how much more insensible must they be to the ridiculous display of human pomp and pride; and how much ought this circumstance to influence our treatment of them! The necessity of this may be understood from the anecdote related by Diderot of the young blind man who was brought to trial for having thrown a stone, which struck another person in the head, and for various misdemeanors. "He appeared before the judge as before his equal; nor could any threats intimidate him. 'What can you do to me,' cried he to M. Herault?—'I will cast you into a dungeon,' answered the magistrate. —'What then?' returned the blind man,—'I have been living in one all my life time.' What an answer! What a text for a man who loves to moralize! We take our leave of the world as of an enchanting spectacle; the blind man goes out of it as from a dungeon; if we have more to enjoy in living than he has, at least he has less to regret in dying." But Diderot here displays more ingenuity than observation: the blind do not die with less regret than we do; the love of life is not lessened by the want of one sense, any more than it is in the case of the poor by the want of wealth; many blind men possess high moral courage; some display a degree of independence of character, which at times degenerates into obstinacy, and excessive egotism; but they are seldom possessed of much physical courage.

Nor is the world to them a less enchanting scene than it is to us,—provided they have occupation. Blindness is not the sole, nor the principal cause of the unhappiness of the blind; and, were they not continually reminded of their inferiority by our officious and unnecessary expressions of sympathy and compassion, they would not feel it. They cannot conceive how the sense of sight can be the source of any positive pleasure to us, otherwise than as it enables us to ascertain the physical qualities of objects at a greater distance than they can by the feeling. Hence they look upon the want of it as a loss of advantage, and not of enjoyment. There is a great deal of philosophy and of good sense in the answer of a blind man to the question, Whether the possession of sight would not increase his happiness? "I cannot conceive that it would," said he, "in a very material degree. I suppose your eyes serve with you the same purpose that my hands and cane do with me; that is, to ascertain the shape and other physical qualities of bodies. The only advantage you have, is the ability to do this at a greater distance than I can; now if I were to choose, it would be rather to have my arms so constituted that I could reach any object which you can see, than to possess what you call vision." Hence it is that we seldom find those who are born blind repining after sight; but we do see them sitting bowed down under a sense of humiliating dependence; with their faculties undeveloped by action, and their minds gradually degenerating into imbecility, from the monotonous torpor of their existence.

As a general rule, blindness is more prevalent within the torrid zone, less in the temperate, and again increases towards the pole: in dry and sandy soils it is more prevalent than in moist ones. Egypt is the country of the blind *par excellence;* different writers have estimated the proportion of the blind there very differently; some say, that one man in every hundred is totally or partially blind; others one in three hundred. The latter calculation is probably the nearest to the truth; but from our observation of the number of men with but one eye, or with distorted eyes in the Egyptian army, we are inclined to think that the number of the blind in Egypt must be fearfully great. The cause is probably the fine sandy dust with which the air is continually filled in Egypt; and which exists to such a degree, that the first cotton machinery sent out from England for the Pacha Mehemet Ali, was rendered useless by it in a very short time. This difficulty is the greatest which his engineers have had to overcome. In several countries of Europe, the census gives accurately the number of the blind.

In Belgium, in 1835, out of a population of 4,154,922, there were 4117 blind, being one in 1009. In Prussia, in 1834, out of a population of 13,509,927, there were 9575 blind, being one in 1410. In this country, we have no regular statistics on the subject, but taking Prussia as the ratio, we may conclude that out of the twenty-five mil lion which go to constitute the population of the United Kingdom, 18,000 are blind.

Institutions for educating and otherwise improving the condition of the blind, were first known in France. The earliest idea of such an establishment was conceived by Valentin Haüy, brother of Haüy the celebrated French mineralogist; it was suggested to him by his acquaintance with a blind German lady, the Baroness von Paradis, of Vienna, who visited Paris in the year 1780, and performed on the organ with general applause. Haüy repeatedly visited this ingenious lady, and was much surprised to find in her apartments several contrivances for the instruction of the blind; for instance, embroidered maps and a pocket printing apparatus, by means of which she corresponded with von Kempelen, in Vienna, the ingenious inventor of the chess-player and speaking automaton, and with a learned blind gentleman, named Weissenburg, at Manheim. The philanthropic Haüy compared the high cultivation of these two Germans with the degraded state of the blind in France, where at the annual fair of St Ovide, an innkeeper had collected ten poor blind persons, attired in a ridiculous manner, and decorated with asses' ears, peacocks' tails, and spectacles without glasses, to perform a burlesque concert. Haüy now turned his attention to the condition of the unfortunate blind, with a view to its improvement. He examined the character of an hospital for the reception of the blind in Paris, but found little in it to admire. This establishment, called the "Hospital Royale des Quinze-Vingts," or the hospital of the fifteen score, was instituted in 1260, by one of the kings of France after his crusade to Egypt, during which so many soldiers became blind by the ophthalmia prevailing in that country. From the early period of 1260 till 1780, this institution had continued to afford a refuge to never less than three hundred families of indigent blind persons from all parts of France. At the revolution, some of its endowments were seized, and the institution threatened with ruin, but it was afterwards re-established and still exists, on a somewhat improved plan. Besides supporting the inmates of the hospital, two hundred out-door pensioners are each allowed one hundred and fifty francs, or £6. 5s. annually. When scrutinised by Haüy, this large establishment did not exhibit any system worthy of imitation. It was little else than a charity work-house for the blind, and formed, on the whole, a spectacle of dullness and moral degradation. In 1784, Haüy opened a new asylum, under the patronage of the *Société Philanthropique*, and since called the "Institution Royale des Jeunes Aveugles," or the Royal institution for the Juvenile Blind, in which he set on foot that excellent course of instruction which has since been copied in all quarters of the world. The young inmates were instructed not only in appropriate mechanical employments, as spinning, knitting, making ropes or fringes, and working in pasteboard, but also in music, reading, writing, arithmetic, geography, and the sciences. For this purpose he invented particular means of instruction, resembling those with which he had become acquainted by his intercourse with the two blind Germans. For instruction in reading, he procured raised letters of metal, from which, also, impressions might be taken on paper, the impressions being so deeply sunk in the paper as to leave their marks in strong relief, and which marks were felt by the fingers of the pupils. For writing, he used particular writing-cases, in which a frame, with wires to separate the lines, could be fastened upon the paper. For ciphering, there were movable figures of metal and ciphering boards, in which the figures could be fixed. For teaching geography, maps were prepared, upon which mountains, rivers, cities, and the borders of counties, were embroidered in various ways. In the beginning, the Philanthropic society paid the expenses of the institution, which was afterwards taken under the protection of the state.

The example thus set by France was followed by Great Britain. In 1790, an institution for the blind was established at Liverpool; a second was commenced at Edinburgh in 1792–3; one at London in 1800; and soon after, various other towns were benefited by similar establishments.

The Glasgow Asylum was begun as late as 1828, by an endowment of £5000 by a benevolent individual, (John Leitch, Esq.) It is for both young and old, like that at Edinburgh, and gives a useful education to a class of beings who would otherwise be left without methodic instruction. It has gone on, increasing in numbers and prosperity, ever since its commencement, as the following table (extracted from the *Report for* 1839) will show:—

Number of blind persons in the asylum, Glasgow, since its establishment; specifying the number each year, and the proceeds for work:

Date.	Number from 9 years and under 14.	Number above 14 years.	Amount of Sales.		
1828	8	14	£[illegible]	2	5
1829	10	18	642	14	6
1830	12	22	[illegible]	16	11
1831	14	28	[illegible]	11	5
1832	14	28	1101	9	7
1833	16	29	1149	17	6
1834	18	30	1203	6	1
1835	20	36	1553	16	3
1836	23	37	2514	15	1
1837	25	39	2472	1	0
1838	28	42	[illegible]	11	3

The male adults are employed in the weaving of sacking-cloth, making baskets of various sizes, spinning twine, making and repairing mattresses, making door-mats, hearth-rugs, door and table rugs, with fringed rugs for parlour doors. The boys are employed in working nets for wall trees, sewing sacks, and such work as they are found capable of doing till their education is finished, and they have acquired strength sufficient to be put to regular trades in the asylum. The female adults are employed in sewing, knitting, netting, spinning and winding of pirns for the weavers. The girls assist in the household work, and in addition to their general education, they are instructed in knitting silk purses, stockings, and caps.

The wages are regulated in these departments by the amount of work performed. They are allowed the same rate that other workmen have for the same kinds of work. It being ascertained that a man can make seven or eight shillings per week, he receives that as his weekly wages. At the end of every four weeks, a statement of his earnings is made up from the work-book, and whatever he has earned over that sum is paid him; and, as a reward to industry, he receives one shilling per week of premium: but, if the weekly amount be not kept up, or the work be badly done, there is no premium allowed.

Ever since this regulation has been adopted, a marked improvement has taken place, both in the quantity and quality of the work produced. At the monthly settlement, the over-earnings which some of them have had to receive, have amounted to six, ten, and even twelve shillings. It is the practice also in this institution, that as soon as a person has acquired a proficiency in one trade, he is instructed in another; so that, if there be over stock from the one occupation, he can betake himself to the other. It is, therefore, not uncommon that the same person is at different times employed in two or three departments.

The over-earnings, with the premiums paid in 1838, amount to £131. 1s. 3d. The delight exhibited by the blind workmen and families, when they return with the fruits of their labour, may be easily conceived. A spirit of industry is not only excited and kept up, (very different indeed from their former habits,) but an opportunity afforded of enjoying all those blessings resulting from the endearing relations of home, which they never could enjoy, were they (as is the case in some institutions) maintained within the establishment.

On the 19th December, 1836, the treasurer gave into the funds of the institution, from the sale of the Statements of Education of the Blind, £40, together with all the books remaining on hand, with a request, that as there was no provision for the blind by the charter, when any of them were unwell, that the directors would allow a sum annually for that purpose. In consequence of this, it was recommended to the general meeting, that the sum of *ten pounds* annually, should be given, agreeable to his request; which was confirmed.

Thereafter a society was formed, with regulations for their government:—all blind inmates receiving wages, pay into the fund every four weeks, on the day that the over-earnings is paid, each male, 6d., and each female, 3d. When confined to bed and unable to work, each male receives 6s. per week, and each female, 4s. If confined for three months, the aliment is reduced; the male to 4s., and the female to 3s. On the death of any member or their wives, the sum of £3 is allowed to the survivor, for funeral charges; and if a child, £1. As yet, the funds have been sufficient for all demands; but if at any time there should be a deficiency, the participators are so convinced of the advantages of the society, that if it should at any time fall short, they cheerfully agreed to add to their monthly contributions.

The educational department of the institution is conducted with great spirit and success. The branches taught are arithmetic, geography, and the elements of astronomy, and geometry. The addition of a knowledge of music to the qualifications of the blind is also industriously cultivated; and since the invention and introduction of the embossed system of printing with Roman letters by John Alston, Esq., of Rosemount, honorary treasurer of this institution, a broad basis has been laid, which promises to render the education of the blind as perfect, and as extensive, as that of the seeing. On that system have been already printed several elementary books, the whole New Testament, with the Scotch Metrical Version of the Psalms and Paraphrases, the English Liturgy, an English Grammar, a musical Catechism, Æsop's fables with cuts, &c. &c., and these have found an extensive circulation, both in this country and in America. It may also be stated that arrangements have been entered upon, by which the whole Bible shall be printed at this institution. The book of Genesis is already finished, and the work is going on with rapidity.

The mode of instruction adopted is the following:—After the pupils have acquired a knowledge of the shape of each letter of the alphabet, they are taught orthography; they next proceed to the study of etymology; the derivation of words and their relation to each other, are particularly explained. After they have attained this, words of two and three letters may be submitted to their touch. They should then be made to feel the words with two or three of their fingers, placing a finger on each of the letters; by this means they will be able to decipher two or three letters at once, which by practice will give a dexterity and fluency to their reading; their finger nails to be kept short to prevent them from injuring the surface of the letters. By this system of tuition, the memory and the understanding, as well as the sense of touch, become the channels through which instruction is conveyed.

At present there are in the Glasgow Asylum above thirty individuals, whose ages vary from ten to thirty-two years, who can read, and the attainments of some of them would bear a comparison with those that see of the same age and time under tuition. On the sabbath days, when they are prevented from attending church by unfavourable weather, they read their New Testaments and other books now provided for them, the same as the seeing; and in the evenings, instead of being congregated together, and instructed orally by their teacher, as was the practice before the introduction of this system of printing, each pupil has his book and lesson assigned him, and the whole retire to their apartments, and peruse the lessons. At the hour fixed, they assemble in the school-room or chapel, and repeat what they have learned. To the seeing, nothing can be more delightful than to contrast the advantages they now possess, and their former situation.

The following Table, showing the total number of blind persons admitted into the Glasgow Asylum for the Blind since the commencement, together with the causes of their blindness, so far as is known, has been got up with great accuracy, and will be useful to many:—

Blind from their birth,	19
In consequence of inflammation,	31
— — Scarlet Fever,	1
— — Small Pox,	20
— — Typhus Fever,	1
— — Nervous Fever,	1
— — Opacity of the Cornea,	1
— — Vitriol thrown on the Eyes,	1
— — Amaurosis,	7
— — Cataract,	4
— — Cataract, also Deaf and Dumb,	1
— — Accident,	11
— — Vomiting of blood,	1
— — Measles,	1
From causes not known,	15
	115

The following are the institutions for the blind in this country, with the numbers each contained, according to their last reports:—

London Institution contains	122
Liverpool —	108
Edinburgh —	80
Glasgow —	70
Bristol —	50
Norwich —	50
Dublin, Richmond	39
Do., Molyneaux	30
York —	30
Belfast —	11
Limerick, no return.	
Manchester not yet opened.	
Newcastle —	10
	600

Thus, in a blind population of nearly 18,000, there is only 600—at most, not 700—in all the institutions in this country, where any provision is made for their instruction in mechanical arts, and for their moral and intellectual training. Before the introduction of the mode of printing in the Roman letters in relief, in January, 1837, there were only very few who knew letters, and the greatest portion of these were in the Glasgow institution. Fortunately this is no longer the case; for in London, Edinburgh, Bristol, Norwich, York and Newcastle, there are many who will bear a comparison in their attainments with persons of the same age, who have all their faculties.

It is earnestly to be hoped that the success which has attended the introduction of this system of reading into some of these institutions will induce others to adopt the same; so that, all acting upon the same mode of printing and teaching, it may be the more effectual for the general benefit of the blind, and may carry into practical operation what is aimed at, their moral and religious interest.

BLIZARD, Sir William, surgeon and vice-president of the London hospital, F. R. S. L. and E., F. A. S., &c. was born at the village of Barnes Elms, in Surrey, in the year 1743; being the youngest but one of five children of William Blizard, an auctioneer. His early education was neglected; so that he had not the advantage of good classical instruction; but, in after years, and without assistance from others, he acquired tolerable facility in reading Latin. He was articled to a Mr Besley, surgeon and apothecary at Mortlake; and while with him devoted much attention to the study of botany. Sir William commenced his professional studies in the metropolis at the London hospital. At an early period of his life he was elected surgeon to the Magdalen, a situation which he retained until the year 1780, when he was appointed surgeon to the London hospital. It is to his benevolent and active efforts that the London hospital owes, in a great measure, its present state of prosperity, and its enlarged capability of usefulness. In the year 1787, Sir William was appointed professor in anatomy to the old corporation of surgeons; and in 1788 he was unanimously re-elected. In a few years afterwards he became an examiner. He also rendered considerable assistance in obtaining a charter for the new royal college, in the proceedings of which he took a great interest to the close of his life. In 1811, the court of assistants voted him their grateful thanks "for the extraordinary services he had rendered to the college as one of the auditors," and "for the benefits derived to the college from the great zeal and eminent talents displayed by him in its multifarious departments." On his decease, the court of assistants also agreed to resolutions expressive of their deep respect for his memory. In 1803, on the occasion of presenting an address to the king from the college of surgeons, Sir William received the honour of knighthood. Sir William was partly the founder, and continued for many years chairman, of the anatomical society. Among other works, he published "An account of a new method of treating Fistula Lachrymalis," in the Philosophical Transactions, vol. lxx. p. 239; "Experiments and Observations on the external use of Tartar Emetic," in the London Medical Journal, 1789; "Observations on the use of Electricity in Deafness," in the same Journal for 1790; "Suggestions for the Improvements of Hospitals and other Charitable Institutions," 8vo, 1796; a book of considerable merit, which was translated into the German language by Dr J. A. Albers; "A Lecture to the Scholars at the Maritime School at Chelsea (of which institution he held the office of surgeon), on the Situation of the Large Blood-Vessels of the Extremities, explaining the use of the Tourniquet, to which is appended a brief explanation of the Nature of Wounds," 12mo, 1798; "A Paper on some Epidemic Effects," in the medical facts and observations, 1772; "Hunterian Orations," delivered in 1815, 1823, and 1828; his "Oration, the first delivered before the Hunterian Society, with Supplementary Observations and Engravings." In 1785, he published "Desultory Reflections on Police; with an Essay on the Means of preventing Crimes, and amending Criminals." Sir William was elected Fellow of the Antiquarian society in 1779; and Fellow of the Royal society in 1787. He was Fellow of the Royal society of Edinburgh, and corresponding member of the Royal society of Gottingen. He assisted in establishing the Horticultural society; but, after a few years, retired from it, in consequence of the fashionable *fêtes*, which he considered incompatible with the objects of a scientific body. He was one of the founders of that highly useful and interesting establishment, the London institution; of which, for many years, he was vice-president. In his ninety-third year, he presided at the annual meeting. He was consulting surgeon to the deaf and dumb asylum, the marine society, the clergy orphan asylum, and the London orphan asylum.

In the summer of 1827, Sir William, then eighty-four years of age, paid a visit to Edinburgh, which was the longest journey he ever made from home. He experienced the greatest pleasure from the warm and kind reception which he there met with from several of his old friends and former pupils, particularly from the Bells, Dr Monro, and others who might be named. In 1833, he was invited by a numerous and highly respectable body of individuals, chiefly composed of members of his own profession, in token of their high esteem, to dine with them at the Albion Tavern. But although the energy of an iron constitution had sustained the wear and tear of incessant activity of mind and body up to nearly his ninetieth year, it began now to yield. His sight failed him; and he became nearly blind. Having been informed that he had cataract, he determined on its removal; and the lens in the right eye was skilfully extracted, by Mr Lawrence. Sir William bore the operation, and the subsequent confinement, with great composure and patience. Nothing could be more gratifying than the result. He found himself able to recognise his friends, and to write as well as ever; and he afterwards appeared in improved health and spirits. He died on the 28th August, 1835. A life of him has been published by William Cooke, Esq.

BOBBIN-NET. The manufacture of bobbin-net, as a substitute for thread and silk lace, is extensively carried on in Nottingham and its neighbourhood, and is also followed to a considerable extent in the counties of Devon, Somerset, and Norfolk. The annual consumption of raw cotton for this manufacture is stated to be about 2,400,000 lbs. weight, and the fixed capital embarked in it is little short of two millions. Within the last fifteen years, the manufacture has extended to the continent, Calais being the principal seat of it there, but France is indebted for its fine yarns to England, which it receives on payment of a duty of about 2s. 10d. a lb.

The manufacture of bobbin-net dates from only about the middle of the last century. The stocking-frame suggested the invention. It was discovered, it is said, by mere accident, that by applying to the stocking-frame another machine as an appendage, and which was called the "tickler machine," the stocking-loops could be removed in certain and various directions, so that the work assumed somewhat the appearance of lace. The net thus produced was, however, deficient in this essential point, that, when unstiffened, it no longer retained the appearance of lace. Notwithstanding this defect, upwards of 20,000 persons were at one time employed in making this net and in ornamenting it with embroidery. This partial success appears to have acted as a stimulus, and, about the year 1770, many attempts were made to contrive machinery that should more closely imitate the lace made by hand, by twisting and traversing the threads round each other. A machine was at this time brought from Switzerland, and various attempts were made to improve it so as to produce a sort of plat; but this was found to be a slow and imperfect process, and was soon abandoned. Numerous attempts were then made to produce a more perfect mechanism. Winding bobbins with teeth and rolling in other rock-teeth,—threads wound upon wire,—tier upon tier of hooks,—revolving wheels on slides,—and hundreds of other plans, were attempted. By some of these the bobbin-mesh was indeed produced, yet the slowness of the operation, and still more the want of accuracy in the working, prevented the adoption of any one of those inventions. In this state of things, a workman of Nottingham, employed in making machinery for producing fishing-nets, seized upon a hint furnished by a child at play, and discovered by that means a mode of forming the bobbin and carriage now used in the bobbin-net machine. The invention was applied in the first instance to the production of fishing-nets, and many abortive attempts were made before the principle thus discovered could be applied to the manufacture of bobbin-net lace. It was not until the year 1809 that the first successful machine for this purpose was perfected. The first bobbin-net machine was extremely complicated in its contrivance, and for this reason slow in its operation. It had twenty-four motions to the series for twisting the mesh, and four other motions were required to secure the twist from unravelling. The right to this invention was secured by patent, and proved to be a most successful speculation to those who embarked in it. Before the fourteen years for which the patent was granted had expired, the machine had been so far simplified as to require only thirteen instead of twenty-four motions for completing the mesh, and only two instead of the four motions that had been necessary to secure the twist; and since the invention has become the property of the public by the expiring of the patent, so much ingenuity has been brought to bear upon the construction of the machine, that only six motions are now needed for the production of the mesh, and the two motions then needed for securing the work are now performed simultaneously with the other six. By these means the speed of the machines has been increased twelve-fold, and, in consequence of the greater simplicity of the working, it has been found practicable to propel them by steam and water power. The net produced in the original machines was necessarily limited in its width to one yard and a half, but many frames are now in use which make net four yards wide. It has also been found possible, by the aid of machinery, to work various ornaments into the net, and means have also been discovered for working the net into slips of various widths,—the original machine having been capable of producing only one plain broad piece. The simplification of the machinery has of course occasioned a reduction in the cost of producing the manufacture; but the profits of the possessors of the patent must, notwithstanding, have been ample, since they were enabled to take advantage of the desire of the public to purchase their fabric to such a degree as to sell for five guineas that which may now be purchased for half-a-crown.

BODMIN; a market-town in the county of Cornwall, 225 miles from London. It is situated near the centre of the county, in a hollow between two hills. Races and assemblies are occasionally held here. Bone lace was formerly made here in considerable quantity, but the chief manufacture at present is that of shoes, which are sold in great numbers at the markets and fairs. Woollen cloth and yarn are made, but to no great extent. Saturday is market-day. Population, in 1831, 3782.

BONE (*a.*) Bones have of late years risen into high consideration, on account of the valuable properties which have been discovered to belong to them, for the purposes both of agriculture and chemistry. When crushed in a mill, the powder is found to be of the most fertilizing character as a manure, and from its portability can be applied to elevations and steeps to which heavier manures cannot be carried. "Steeps (says Mr M'Diarmid of Dumfries) which for centuries grew nothing but grass, and grass too of inferior quality, are now covered in regular rotation with turnips, oats, barley, and even wheat, and, allowing for some difference of climate (the effect of which is felt more or less in backward seasons), are all but undistinguishable from the plains below. Up till 1828 or the following year, thirty-two bushels of crushed bones were considered equal to twenty cubical yards of stable dung, and each respectively the requisite manure for an acre of ground—a difference in portability which may be expressed by one to thirty, without the slightest exaggeration. If one cubical yard of thoroughly made manure be considered a sufficient load for a horse and cart, twenty such conveyances would be required to transport from town to country the quantity named; and supposing it fairly deposited on the farm, the grand question is, how many horses will find it hard enough work to convey the load up hill. Thirty we should consider a moderate number, and when to these we add the labour of two scatterers to each cart, the expense of tolls, extra feeding, and other items, the reader will at once perceive the total impossibility of manuring, on the olden principle, mountain land. The expense, in fact, was so enormous, that the thing was rarely if ever attempted; while with bones the case is so different, that the horse and cart and man that bring the article from the mill can take it to the place of its destination; and when there, go over an acre of land with greater ease than sixty persons could do with ordinary dung. Nor is this all; for although thirty-two or thirty-four bushels of bones per acre were very generally used at first, experience has shown that so large a quantity is not at all necessary. Land is always grateful for favours conferred, and never forgets the first benefit; and hence the discovery, that from twenty to twenty-five bushels stimulate just as well as the original quantity. Such, in fact, is now the general practice, and it is further considered a good plan to deposit in drills or furrows common manure first, and then spread a sprinkling of bones on the top. In this way there is action and reaction, and the fermentation natural to the one article affects the other favourably, by bringing its latent virtues sooner into play. In some parts of England two quarters per acre, or sixteen bushels, is considered sufficient, and a writer in the Mark Lane Express strongly recommends mixing crushed bones with coal ashes passed through a riddle, that the finer parts may be taken, and the rougher rejected. From all this, it is plain that extreme portability is the leading virtue of bone manure, and there can be no doubt that it is on the strength of this quality chiefly that so many upland hills and steeps in almost every county in Scotland, previously bare even of blades, have been reclaimed almost from a state of nature to a state of great and growing fertility—vastly to the augmentation of the agricultural wealth and resources of the country."

Bones first came to be used as a manure, around Hull, so far back as thirty or thirty-five years ago, but their use did not spread into Scotland till about 1825. In Yorkshire and Lincolnshire they are most extensively used.

The *Bone-breaking machine* consists of two rollers grooved and indented, and with pinions on their ends, by which they may be moved either by animals, water, or steam power. The surfaces of the rollers are filled with indentations and strong teeth, which penetrate and break the bones to pieces. This is accomplished by employing separate cast-iron wheels, placed side by side upon an axis, to compose the rollers; the wheels have coarse teeth, similar to those of a saw or ratchet wheel; each wheel of the lower roller is an inch thick, and they are placed at distances of an inch and a half asunder, having circles of hard wood or iron placed between them. The bones which have passed through the rollers slide down an inclined board, and collect at the bottom in a heap. They are then passed through the rollers a second time, which are screwed tighter in order to pulverize them more effectually.

In chemistry, bones in a calcined state are used in the manufactory of ivory black, and in the purification of sugar, &c. In 1811, M. Figuier of Montpellier, discovered that animal charcoal or calcined bones blanched vinegar and wines with much more energy than vegetable charcoal, and in 1812 M. Derosnes proposed to employ it in the purification of syrups and sugar refining, since which it has been extensively used, bone charcoal being found more powerful than wood charcoal for that purpose. The calcination of bones is effected either by heating them in a retort similar to that in which coal is decomposed in the gas-works, or in small pots piled up in a kiln.

BONE, Henry, R. A., an eminent enamel painter, was the son of a cabinet chair-maker, at Truro, in Cornwall, and was born in that town on the 6th of February, 1755. When twelve years old, his parents removed to Plymouth, where, in consequence of his having copied a set of playing cards, which were shown to Mr Cookworthy, then carrying on business as a china manufacturer, who considered that they evinced much talent, he was bound apprentice to that gentleman; and subsequently, on the factory being removed to Bristol, he there completed the term of his apprenticeship in the year 1778. Although the hours of employment in the factory were from six in the morning until six at night, he found sufficient time to practise drawing, by copying prints, and such other matters of art as fell within his reach, though the purchase of them was a serious consideration, his only income being from a small allowance made to him by his master for superintending the labours of his fellow-apprentices, and from small sums received for working after the regular hours at the factory. In 1779, on the failure of the Bristol establishment, where he had continued to be employed after the expiration of his apprenticeship, he removed to London. The first occupation at which he engaged was that of enamel painting for watch-cases, shirt buttons, brooches, pins, lockets, &c. as well as device painting in hair, as it was termed. and so great was the demand for such articles, that he was almost exclusively employed for Messrs Randle, Jackson, and White, in Paternoster Row, then carrying on a large export trade. The device painting beginning to fail in its attraction, Mr Bone determined to hazard an effort to carry enamel painting, both in size and power, far beyond the limit to which it had heretofore been confined. Accordingly, his first consideration was to simplify the several colours then in use, and to endeavour to reduce them to as few in number as possible, and to render them, together with the necessary fluxes and enamels, of one uniform consistency as to fusion, expansion, and contraction. This determination, as to the simplification of the colours, arose from the knowledge that, as they practised, enamel painting was fettered by rules established by ignorant practitioners, rendering it necessary that the artist should first mix upon his pallette every tint he intended to use; whereas the opinion of Mr Bone was, that the same principles applied to enamel as to any other species of painting, and that, therefore, the main point to be considered was, how, with the eye of an artist, to combine the simple elementary colours, so as to produce the harmony, richness, and power attained by the most eminent painters in oil of the ancient and modern schools. Entertaining such views of his peculiar calling, it is not to be wondered at, that he at once, having by his ingenuity and perseverance surmounted the obstacles that interposed, sprung into notice, and in no long time attained to eminence. Nor were his studies wholly confined to the chemical and experimental part of his art; he nightly practised himself in drawing from plaster casts, and copied in water colour such pictures and drawings as he could obtain, and from which he thought he could derive advantage.

The first attempt of the artist in enamel portrait was a picture of his wife, a descendant of [illegible] Vandermeulen, battle painter to William III., [illegible] to whom he was married in 1779. This picture, on its exhibition at the royal academy in [illegible] attracted much notice from its then unusual [illegible] being about two inches and a half in height, [illegible] common size of enamels being seldom more [illegible] that of a half-crown piece. Two years after [illegible] executed a portrait of himself, which was also exhibited at Somerset House.

Through the introduction of a friend he [illegible] acquainted with Dr Walcot, then pre-eminently known as Peter Pindar, by whose advice he [illegible] abandoned the practice of device-painting, and adopted that of miniature and enamel. It was by this gentleman's suggestion, also, that he was accustomed annually to pay a visit to his native county, where he was fully employed in painting miniature portraits on ivory, from many of which he received commissions to make copies in enamel on his return to London. When in town he constantly occupied himself in making enamels from pictures by the best living artists, which he usually exhibited at the royal academy. A portrait of Lord Eglinton attracted the notice of the prince of Wales; and his royal highness became the purchaser, accompanying the notification of his intention with a command for the artist to attend at Carlton House, where he was received with the most flattering marks of attention. The prince was for several years the purchaser of the principal pictures painted by Mr Bone, which were not executed by commission; and in 1800 he was appointed enamel painter to his royal highness. His rise in public estimation was now extremely rapid; commissions flowed in upon him for pictures in enamel; so much so, that he found it necessary to give up his annual excursions into Cornwall, and to abandon the practice of painting on ivory. On the 9th of November, 1801, he was elected an Associate of the royal academy, and the same year removed into Berners Street, Oxford Street. He was subsequently appointed enamel painter to their majesties, George III., George IV., and William IV., and to his royal highness the Duke of York. He now executed several copies after pictures by Sir Joshua Reynolds, on a very large scale, particularly "The Death of Dido," "Cymon and Iphigenia," "Venus," "Hope nursing Love," &c. &c.; also full length portraits of George III. and the Queen, after the originals by Sir William Beechey, besides a vast number of smaller works.

During such time as he was not engaged in painting by commission, he occupied himself in the execution of a series of historical portraits of illustrious personages in the reign of Queen Elizabeth, a series of enamels unrivalled in the world. They amount to eighty-five in number, and range in dimension from thirteen inches by eight to five inches by four: are most exquisite in finish and powerful in effect; and contain the resemblances of some of the most illustrious men who have adorned the brightest period of English history. There are two other sets of enamels executed by Mr Bone, but both of them were painted by commission. The first is a series of portraits of the principal [illegible] of the Russell family, from the reign of Henry VII. to the present time, executed for his [illegible] the Duke of Bedford, and placed in the collection at Woburn Abbey: the other is a set of portraits of the royalists, during the civil wars in the reign of Charles I., painted for James Picker[illegible] Ord, Esq., of Edge Hill, near Derby. The other set, however, was not concluded by this artist, but is in course of completion by his eldest son, Henry Pierce Bone, of Percy Street, Bedford [illegible]. The Duke of Bedford for a long period [illegible] of Mr Bone's most munificent patrons and [illegible] friends. His Grace possesses some of [illegible] exquisite of his works; particularly a re-[illegible] "Venus," after Titian; "Bathsheba," [illegible]; "La Belle Vierge," after Raffaelle, in the collection at Bridgewater House; and "The [illegible] of the Virgin," after Murillo.

The unremitting exertion of a long series of years began to be too great for the advancing age of Mr Bone; and his eyesight in some degree failing, he was compelled to give up the practice of his profession. Accordingly he retired from his house in Berners Street, and removed to Clarendon Square, Somers Town, where, after three years' residence, during which his health gradually declined, he was attacked by paralysis, of which he died on the 17th of December, 1834. By his wife, whom he survived several years, he had twelve children, ten of whom he brought up to an age of maturity, and three of whom he placed in expensive professions, the army, the navy, and the bar.

BOOKER, Luke, LL. D., M. R. S. L., vicar of Dudley, was born at Nottingham on the 20th Oct. 1762. In early life the whole energy and vigour of his mind were directed to the attainment of classic and literary knowledge, and, devotedly attached to the doctrine and discipline of the Church of England, he took holy orders in 1785. Struck with his proficiency in acquirement, the bishop of Lichfield and Coventry (Dr Cornwallis) ordained him without a title; but he shortly afterwards became lecturer of the collegiate church of Wolverhampton, from whence he removed to the curacy of Old Swinford, and subsequently he became and continued for many years minister of St Edmund's church in Dudley. In 1806 he was instituted to the rectory of Tedstone de la Mere, Herefordshire, on the presentation of his brother-in-law, Richard Blakemore, Esq. On leaving Dudley a valuable piece of plate was given to him by his congregation. He returned to Dudley in 1812, on being presented to the living by William Lord Viscount Dudley and Ward. At Dudley he continued, until within a few weeks of his death, to discharge the duties of his sacred office; and the best and most unequivocal testimony to his worth is to be found in the voluntary respect paid to his memory by those among whom he so long and faithfully ministered. It is a striking fact, and one which proves the high degree of public estimation in which as a preacher he was held, that during his ministry, he preached *one hundred and seventy-three* sermons on public and charitable occasions, and that the collections made on behalf of the objects for which he pleaded amounted to nearly *nine thousand pounds.*

As an author Dr Booker's productions were numerous. The chief are Poems, sacred, &c. 1785, enlarged 1788; the Highlanders, 1787; Sermon at Old Swinford, 1788; Miscellaneous Poems, 1790; Sermon on the memory of Mr George Bradley, 1791; Malvern, a Poem, 1798; Sermons to promote Christian Knowledge, 1793; Fast Sermon and Address on Riots 1793; the Hop Garden, a Poem, 1800; Sermon for Blue Coat Charity; Address to the Dudley Association, 1801; Christian Worship for Work-houses; Select Psalms and Hymns for Churches; Poems inscribed to Lord Dudley and Ward, 1802; Duty of inoculating with the Cow-pox, 1802; Christian Intrepidity, 1803; Tobias, a poem, 1805; Calista, or the Picture of Modern Life, 1806; Address to Parliament on enlarging Churches, 1809; Sermon on the Jubilee, 1809; Temple of Truth, 1810; Address to the Legislature, 1810; Two Assize Sermons, 1816; Euthanasia, the State of Man after Death; Lectures on the Lord's Prayer, 1824; Discourses and Dissertations, 2 vols.; Account of Dudley Castle; Mourner comforted; the Springs of Plynlimmon, a poem; the Mitre Oak; Mandane, a drama; Illustrations of the Litany; Tributes to the Dead, Epitaphs for Persons of all ages and circumstances, 1830. Dr Booker died at Bower Ashton, near Bristol, on the 1st Oct. 1835.

BOOK-TRADE (*a*.) In 1836, the taxes affecting books were somewhat diminished: 1st, By the duty on paper having been reduced from threepence per pound to three halfpence; and, 2d, By its having been enacted that *five* only, instead of *eleven*, copies of new works should be furnished, at the expense of authors and publishers, to public libraries. The duty on the importation of foreign books, printed since the year 1801, has been reduced from £5 a cwt. to £2. 10s., with this proviso, that the books be in foreign living languages, a condition inserted to prevent classical grammars, dictionaries, &c., from being supplied from the continent.

BOOMERANG; a missile instrument used by the Australian aborigines. It is of hard wood, about the size of a common reaping-hook, but shaped like the line described by the ridge of a hay-stack: in scientific language, the shape is a parabola. It is about two and a half inches broad, a third of an inch thick, and two feet long, the extremities being rounded. One side is flat; the other is rounded; and it is brought to a bluntish edge. Altogether, the thing resembles the letter A, but with a rounded top, and no stroke across. The Boomerang is taken by one end, with the bulged side downwards, and the convex edge forward, and thrown directly onward, as if to hit some one standing thirty yards in advance. Instead of going directly forward, as might be expected, and there falling to the earth, it slowly ascends in the air, whirling round and round, in a figure which suggests the well-known armorial bearings of the Isle of Man, and describing a curved line of progress, till it reaches a considerable height; when it begins to retrograde and finally it sweeps over the head of the projector, and falls behind him. This surprising motion is produced by the bulged side of the missile. The air, impinging thereon, lifts the instrument in the air, exactly as, by hitting the oblique bars in the wheel of a wind-mill, it forces that wheel to go round. It is one of the ancient instruments of war of the Australian aborigines. They are said to be very dexterous in hitting birds with it.

BOOTHROYD, Benjamin, D.D., pastor of the Independent Church at Highfield Chapel, Huddersfield; an eminent Hebrew scholar, who died Sept. 8, 1836; aged 68. He had been forty-two years in the ministry, twenty-four of which were passed at Pontefract, and the latter eighteen at Huddersfield. In 1810—1813, he published a quarto edition of the Hebrew Scriptures in quarterly parts; and previously, in 1807, a "History of the ancient Borough of Pontefract," where he was then a printer and bookseller.

BOROLAWSKI, Count; a celebrated Polish dwarf, was born in 1739, and died at his residence, the Bank's Cottage, near Durham, Sept. 5, 1837, at the great age of ninety-eight. His height was short of thirty-six inches, though his person was of complete symmetry. In former years, he travelled on the continent, as well as in Great Britain; but about forty years before his death, he was persuaded by the prebendaries of Durham to take up his residence in the above cottage for life, and they engaged to allow him a handsome income, which was continued till his death. He excelled as a wit and humorist; was acquainted with several languages; and his company was much courted.

BOTTA, Carlo, a distinguished Italian historian, was born in 1766, in the town of San Giorgio, in Piedmont. He studied medicine in the university of Turin, where he obtained his degrees. The first events of the French revolution having excited the minds of many (especially young people) in the countries bordering upon France, Botta partook of the feelings of the times in favour of reform and the improvement of social order. The expression, perhaps inconsiderate, of these sentiments led to his arrest in 1792, but he was released two years after, when he resolved upon emigrating to France. There he was employed in his professional capacity with the French army, styled "of the Alps," which afterwards received the appellation of the army of Italy. In the train of these forces he re-entered his country in 1796, and next year he followed a division sent by Bonaparte to the Ionian islands. There he wrote a description of the island of Corfu, which he published on his return to the continent. In 1799, he was named by General Joubert one of the provisional government of his native country Piedmont. The advance of Suwarrow obliged him to retire once more into France, but after the battle of Marengo he was appointed by Bonaparte to be a member of the executive commission, to whom the temporary administration of Piedmont was entrusted; and, after the annexation of that territory to the French empire, he was elected in 1804 to represent the department of the Dora in the legislative corps. Appointed vice-president in 1808, he found his legislative office to be a mere sinecure under a monarch so jealous of his authority, and he employed his forced leisure in completing his History of the North American Revolution, which he published at Paris in 1810. By the restoration of Piedmont to the king of Sardinia, Botta's nominal legislative functions ceased; he was appointed, in March, 1815, rector of the academy of Nancy; but on the second restoration, he lost his situation, and from that time till his death, he lived privately at Paris, without any employment or pension from government. It was then that he gave himself up entirely to his favourite object, of recording, for the use of posterity, the vicissitudes and calamities of his native country, during the five-and-twenty years that elapsed from the French revolution to the first abdication of Napoleon at Fontainebleau, and the consequent capitulation of Mantua in April, 1814.

Botta was not unaware of the difficulties that awaited him in the execution of his task. Having determined to write the undisguised truth, as far as his mental powers and his means of information would allow,—to speak with frank sincerity not only of princes and ministers, but also of the people, to spare no party, to flatter no friend, and to calumniate no enemy, he communicated his intention to his acquaintances, most of whom observed to him in reply, that "he either would not have the boldness, or would not be able to effect his purpose; and lastly, that supposing the design practicable, he *ought not* to put it into execution." He persisted, however, and having thrown the gauntlet to men of all parties, ultras and liberals, patriots and tramontanists, religionists and free-thinkers, he took his chance with the public. The numerous editions of his book, the avidity with which it has been read from one end of Italy the other, and the very strictures with which it has been assailed by men of all colours, have served to prove that he hit the truth oftener than was agreeable to the parties interested. He published his work at Paris, comparatively safe from the vexatious censure of the local authorities of his own country, but still exposed to the vindictiveness of individual rancour, of wounded self-love, of duplicity unmasked. The work is entitled, Storia d' Italia dal 1789 al 1814. Paris, 1824, 4 vols. 4to.

Mr Botta divided his history into twenty-seven books or chapters, twenty of which relate to the Italian wars from 1792 to the peace of Lunéville in 1801, and the seven last continue the history of Italy under Bonaparte's rule, from his appointment to the presidency of the Italian Republic, up to his abdication of power in 1814, and the consequent restoration of the old dynasties. During this second period, Italy becomes in some measure a province of France; the historian has no longer to record decisive events; the scene of war was removed far from the Alps; the Italians, silent and submissive, continued to supply men and money to assist in propelling the car of the victor, but their history was in a great measure the history of "the great empire," and this accounts for the comparative brevity of this part of Botta's task. Yet this epoch is far from being destitute of interest; the arts by which the Italian republic was metamorphosed into a kingdom, with the apparent approbation of many grave, learned, and influential men, who had a few years before denounced eternal hostility to kings,—the annexation of Piedmont—of the ancient republic of Genoa, the ally of France, —of Tuscany, of Parma, at last of Rome,—to the French empire; the wars of Naples, Calabria, and Sicily, the exile of all the old sovereign dynasties, the long contests between Napoleon and the See of Rome, upon matters religious and political, which ended in the imprisonment of Pope Pius VII., and lastly, the war of the restoration in Italy, in which Austrian and English, French and Italian troops took a part; all these, and many minor topics of interior policy, give to this second part of Botta's narrative an interest not the less intense, because it attaches itself to details more particularly Italian, and less generally known. Mr Botta's death took place at Paris, in August, 1837.

BOTTIGER, Karl August, Aulic councillor the king of Saxony, director of studies at the Ritter Akademie at Dresden, and keeper of the royal museums of antique marbles and of Meng's ..., one of the most eminent archæologists of the ..., was born in 1760, at Reichenbach, in Saxon ..., studied at Leipzig, and was appointed 1784, master of the public school at Guben. He was afterwards, for a short time, director of the gymnasium at Bautzen, whence he removed to Weimar, where, through Herder's recommendation, he became in 1791, director of the gymnasium of that town, and consistorial councillor. In 1804, preferred the offer of a situation made to him his own sovereign to an appointment at Berlin, from this period till his death he constantly resided at Dresden, actively engaged in literary pursuits, and in the performance of his official duties. He died on the 17th Nov. 1835. Among publications may be pointed out particularly— Sabina, or the Toilette of a Roman Lady of fashion, of which two editions were published; Ideen zur Kunstmythologie; 3. Notes on select ... of Horace, (which are most erudite and fully deserve to be translated); 4. Ideen zur Geschichte der Mahlerey. But excellent as all these are, they are equalled in interest and value by the great number of his smaller papers and his letters. Bottiger left two sons; one of whom is professor of History at Erlangen, (author of the History of Henrich der Löwe, History of Saxony, History of Germany, &c., all much esteemed publications,) and the other has a place under the Saxon government. Bottiger of late years instructed the learned prince John of Saxony in Greek. His company was much courted by persons of distinction, on account of his brilliant conversational talents. There was no end to his poignant and sprightly remarks and anecdotes, particularly as he was fond of good cheer, which a sound constitution permitted him to enjoy without fear. Not the least remarkable circumstance in the character of this great scholar was his indefatigable application. At five in the morning he was at his desk, and while at college he usually rose at three or four, so that his eye-sight became much impaired. Some ten or fifteen years before his death, he was successfully couched for the cataract, and had in consequence of this operation, the use of his eyes, assisted by good glasses, up to his death. Many of his pupils are now men of eminence, and some in high stations.

BOTTLES. (*a.*) The duty on stone bottles has been repealed. It was imposed in 1812 at 2s. 6d. a cwt., which was increased in 1817 to 5s. It produced only the insignificant sum of about £3,500 a year, which was collected by the excise at great trouble and expense. The duty on glass bottles still continues, and produces about £110,000 a year. Some regulation regarding the *size* of bottles is much wanted, as many liquors are sold by bottle measure, and yet very considerable differences exist as to the quantities they respectively hold.

BRADFORD; a thriving manufacturing town in the west riding of the county of York, distant from London, 196 miles, N.N.W., and from York, thirty-four, S.W. It has risen into importance only in modern times. It owes much to its situation in the very centre of the manufacturing districts, and to the abundance of coal in the vicinity. Ironstone is also plentiful, and there are some very extensive foundries, especially about three miles to the S.E. of the town. The staple commodities of the town are worsted stuffs, broad cloths, cotton goods, and worsted yarn; ivory and horn combs are also made in great quantity. The commercial operations have been greatly facilitated by the cutting of a branch from the Leeds and Liverpool canal, near Shipley, into the very centre of the town. The cotton-manufactures are of recent introduction, but are making rapid progress. Bradford has indeed suffered less from the depression of trade than most other large manufacturing towns. The rapidity with which its population has increased, is one good evidence of its prosperity. In 1801, it was only 6,393; in 1821, it amounted to 13,064; and in 1831, to 23,233.

The *parish* of Bradford is fifteen miles in length, and at an average four miles in breadth. It comprises the market-town of the same name, the chapelries of Hawarth, Horton, and Thornton, and the townships of Allerton, North Bierley, Bowling, Clayton, Eccleshill, Heaton, Manningham, Shipley, and Wilsden. Population of the parish in 1831, 76,996.

BREAD. (*a.*) Among the recent triumphs of chemistry is that of making bread from *saw-dust*. Although the contemplation of fare thus manufactured is by no means pleasant, yet in the case of a *famine*, the manufacture might prove of infinite service. It is thus explained. All vegetable substances are based on the element, carbon—the matter which remains of a piece of wood, after it has been burnt. In a hundred parts of sugar-candy, wheat starch, arrow-root, gum-arabic, and wood, carbon is respectively in the proportion of 42·85, (or nearly 43), 43·55, 44·4, 42·23, and 42·7. Between starch and sawdust, therefore, there is only the difference of about one and a half parts in a hundred —a mere trifle. When we reflect on what chemistry has already done, we cannot doubt that little pains would be required to discover a process for completely equalising the ingredients, and consequently reducing the dust of wood to the character of flour. Professor Autenreith has already, by maceration, boiling, and subsequently pounding, reduced wood to a powder, from which a palatable bread has been formed; but we may hope that a perfect conversion of the one principle into the other will yet be effected. Such transformations are already familiar to scientific men, and are just among the most useful of the gifts of science, or, we should rather say, contributions to the general well-being. Take the manufacture of paper from useless rags, or of sugar from the same commodity, or of porcelain and glass from stones and clays, and who can say where is the limit to our power of turning to use and productive agency the most apparently worthless and sterile parts of nature? "Who," says Sir J. Herschell, "would have conceived that linen rags were capable of producing more than their own weight of sugar by the simple agency of one of the cheapest and most abundant acids?—that dry bones could be a magazine of nutriment, capable of preservation for years, and ready to yield up their sustenance in the form best adapted for the support of life—that *saw-dust* itself is susceptible of conversion into a substance bearing no remote analogy to bread; and though certainly less palatable than that of flour, yet no way disagreeable, and both wholesome and digestible, as well as highly nutritive?"

BRECKNOCKSHIRE; a county in South Wales, about thirty-five miles in length, and thirty in breadth. The general scenery of the county is distinguished by great sublimity and beauty. The principal mountain is the Vena or Brecknock Beacon, which is reckoned the loftiest in South Wales. The most important of its rivers, next to the Wye, which forms a natural boundary between this county and Radnor, is the Uske, rising from the Black Mountain, and flowing through a fine valley towards the town of Brecon. One of the largest lakes in South Wales is Brecknock-Mere or Llansafeddar, situated about two miles to the east of the town of Brecknock, measuring about two miles across and abounding in otters, pike, tench, perch, and eels. Copper, lead, iron, coal, and limestone in abundance are the most important natural products of this county. The vale of Usk is a sandy loam; the northern part of the county is stiff loam mixed with clay: the vale of Wye is a brown and gravelly loam of good quality. The agricultural produce consists of oats, wheat, rye, barley, turnips, vetch, and potatoes. There is also a considerable exportation of wool, timber, butter, cheese, and cattle of various kinds, to the markets in the neighbouring English counties. The high lands are chiefly used as sheep pastures, and produce a small breed, but of excellent quality. Near the borders of Monmouthshire are large iron-works; woollen cloths and worsted stuffs are also manufactured to a certain extent. The trade has been considerably facilitated by the opening of a canal from Brecknock to Llanelly, thus opening a communication with the sea. It is eighteen miles in length, and nine feet deep, and is navigable for barges of twenty-five tons burden. Population in 1831, 47,763.

BRECON, BRECKNOCK, called by the Welsh *Aber Hondey*, is the principal and county town of Brecknockshire, and is finely situated at the confluence of the rivers Hondey and Uske, distant from London by Monmouth 168 miles. In the reign of William Rufus, Bernard de Newmarch built a castle here—of which some traces are yet visible—from which time the town dates its origin. Brecon consists chiefly of three principal streets, which contain many respectable and well-built houses, and the country in the vicinity is picturesque and fertile. Here are a town-hall, county gaol, and house of correction, and a fine armoury which usually contains 1500 swords and [illegible] muskets arranged in fanciful forms as in the tower of London. Population in 1831, [illegible]. The town, it will be remembered by all lovers of the drama, was the birth-place of Mrs Siddons.

BRIDGENORTH; an ancient borough town in the county of Salop, situated on the river Severn, twenty-two miles S.E. from Shrewsbury, and 139 N.W. from London. It is divided by the river into two portions called the Upper and Lower towns. The Upper town stands on the western bank of the river, on the sides and summit of a rugged hill, or rather rock, which rises to the height of 180 feet above the level of the [illegible]. The appearance of this division of the town is remarkably picturesque. At the southern extremity of the rock are the remains of the ancient castle, consisting of little more than a square tower. Other conspicuous objects are the great [illegible] of water, the old gothic church of St Leonard, [illegible] the more modern elegant structure dedicated to [illegible] Mary Magdalene. Even the steep acclivity of [illegible] rock next the river is covered with houses, [illegible] foundations of the one row being higher than [illegible] chimneys of the other. These are approached [illegible] a winding carriage road, or more directly by [illegible] of steps cut in the rock and rendered safe by [illegible] railings. The upper part of the town is [illegible] with water raised from the Severn, and [illegible] machinery into the great reservoir already [illegible] from which it is conducted by pipes into [illegible] houses. On a part of the ancient moat of the [illegible]tle, a theatre was erected in 1834. The [illegible] brary is a handsome brick building, and [illegible] upwards of 4000 volumes. The lower [illegible] which lies on the opposite side of the [illegible] not so extensive, containing only two [illegible] streets, in which are several ancient houses, [illegible] cularly one called Carehall, occupied by [illegible] pert in 1642. Upwards of three-fourths [illegible] population are returned as employed in [illegible] manufactures, the latter being chiefly [illegible] cloth, stockings, and iron tools. Of late, [illegible] the iron-trade has declined; a large carpet [illegible] factory has been established here. The [illegible] rives its chief importance, however, from [illegible] tion on the Severn, and it is a thriving [illegible]. Vessels are built here, and a large quantity of [illegible] imported for inland consumption, while grain and malt are exported largely. Population in 1831, 5065.

BRINKLEY, John, D. D., Lord Bishop of Cloyne, President of the Royal Irish Academy, F. R. S., &c. &c.; a distinguished mathematician, was a native of Woodbridge, Suffolk. He received the early part of his education at the grammar-school in that town, and from thence he removed to Mr Tilney's at Harleston. He graduated at Caius College, Cambridge, B. A. 1788, as senior wrangler, and Senior Smith's prizeman, and afterwards was elected a fellow of that society. He proceeded M. A. 1791, B. and D.D. 1806. Dr Law, Bishop of Elphin, brother of the late Lord Ellenborough, introduced Mr Brinkley to the notice of the board of Trinity College, Dublin; and in 1792 he was appointed Andrew's professor of astronomy. He devoted himself earnestly to the duties of his office, and published for the use of the students an Elementary Treatise on Astronomy, which is generally considered the best introduction to that science in our language. Dr Brinkley's discovery of the parallax of the fixed stars, in 1814, which was for a time controverted by Mr Pond, was the first circumstance that gave him a European reputation; which was afterwards well supported by his valuable communication to the transactions of the Royal Irish Academy. As a professor, he was chiefly remarkable for his zeal in searching out and encouraging rising merit; he was one of the first to appreciate the abilities of his successor, Sir William Hamilton, and he laboured zealously to extend his fame. When George IV. visited Ireland, he was so pleased with his reception in Trinity College, that he resolved to bestow the next vacant bishopric on one of its members. Mr Goulburn (who was at the time looking to the representation of the University of Cambridge) procured, it is said, the appointment for Professor Brinkley, who appeared to the Dublin University, though really a graduate of Cambridge. He was consecrated bishop of Cloyne in 1826; and shortly after resigned his professorship. Dr Brinkley, as bishop, promoted many exemplary curates, whose labours had been overlooked by his predecessors, and he separated several parishes from his see, to give the inhabitants the benefit of a resident rector. From the time of his elevation, his health gradually declined, and he was forced to abandon scientific pursuits altogether. He however, left behind him some valuable mathematical manuscripts, which there is reason to believe will be published under the superintendence of Sir William Hamilton. His Lordship, though in a very declining state of health, had undertaken a long and fatiguing journey to be present at a conference of the Irish bishops. He died at the house of his brother in Dublin, Sept. 14, 1833, aged seventy-two.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE; a society established within these few years for the purpose of promoting the personal intercourse of men of [illegible] all countries, the most prominent feature of which is, that a meeting is held annually in some quarter of the empire, where all the members are invited to congregate, and where a week is spent in lectures, experiments, discussions, *fetes*, [illegible].

The first meeting of the association was held at York, in 1831, where 350 men of science attended, and were enrolled as members. At Oxford in 1832, and at Cambridge in 1833, the attendance became progressively more numerous, and, in 1834, when Edinburgh was the place of meeting, the list of attending members amounted to 2200, including a large number of distinguished foreigners from all parts of the world. The meetings held at Dublin and Bristol in the two following years were distinguished by further accessions of scientific men; and at the meeting at Liverpool in 1837, the number of members present exceeded 3000—the roll comprising almost every name of any scientific note in Britain, exclusive of many foreign visitors of distinction. In 1838, the association met at Newcastle upon Tyne.

The association is conducted as follows:—A president, three vice-presidents, a general and several special secretaries, and two treasurers, with the assistance of a council, preside over and regulate the general business of the society; or rather it is their duty to recommend such measures as may seem good to them, for adoption by a general committee, which is designed to be the supreme governing body of the institution, and is composed of all such members of the association as have contributed papers to the transactions of some learned society. For greater facility in hearing communications, and in directing the pursuit of scientific objects, seven divisions, or sections, as they are termed, have been formed for the conduct of the scientific business of the association; the first section, or section A, taking cognizance of Mathematical and physical science; section B, Chemistry and Mineralogy; section C, Geology and Geography; section D, Zoology and Botany; section E, Anatomy and Medicine; section F, Statistics; and section G, Mechanical science.

Each of these sections, at the commencement of the successive sittings of the Association (which last for a week each year), is placed under the presidency of some individual distinguished in the particular walk of science giving name to the division, and who is assisted by a sectional committee and secretaries. During the meeting of the Association, every section sits separately, listens to communications, and discusses questions brought before it under the direction of its committee. Subsequently, at a final general meeting, the various sectional presidents report and comment upon all that has been done in the department under their charge. Each section, also, may direct inquiries to be made into any point of particular interest within the range of its subjects, and, with the consent of the general committee, grants of money are frequently set apart, where necessary, for the conduct of these inquiries, which are commonly entrusted to such members as have shown the greatest qualifications for the task. The results of these investigations are, as might be expected, among the most valuable communications laid before the sections of each succeeding year. At the same time, voluntary communications form by far the greater part of the matters introduced to the notice of the various departments of the association.

Besides the regular sectional sittings of the association at their meetings, there are various occasional sub-sections and lesser committees appointed for examination into any particular subjects, which the larger divisions may think worthy of it. There are also evening sittings of a more mixed and irregular character than those which take place through the day. Most frequently, these evening assemblies are devoted either to the discussion of questions before the whole association, or to the hearing of single lectures of an interesting order, and sometimes, also, to the exhibition of experiments. These evening meetings are generally attended by great numbers of ladies. Fetes, dejeuners, and banquetings, fill up very agreeably the remaining leisure time of the members and visitors.

Perhaps the most beneficial result of the association is the production of certain valuable reports on the progress of science, which distinguished members of the association have been induced to draw up annually, at the request of their colleagues, or of the section-committees. These reports bring before the association and the world the latest advances and discoveries in interesting branches of science. Besides thus appropriating subjects to individual members, the sections, at the end of each annual meeting, issue general recommendations or instructions to the members at large, to investigate certain points of interest during the intervals of meeting.

BROOKES, Joshua, F. R. S. F. L. S. F. Z. S. an eminent teacher of anatomy, was born on the 24th of November, 1761. He was one of a numerous family; and, after having obtained an excellent classical education, commenced his professional studies at the early age of sixteen, under the care of Mr Magnus Falconer, and subsequently attended the lectures on anatomy and surgery by Dr Marshall, Mr Hewson, Mr Sheldon, and Dr William Hunter. After attending the practice of the surgeons of the principal hospitals and public institutions in London, he received his diploma as a surgeon. As it was his intention to become a professor of anatomy in the metropolis, he went over to Paris in order to improve himself in the study of practical anatomy, as well as the most important operations in surgery; for this purpose, he was a constant attendant at the Hotel Dieu, and the other Parisian hospitals, then under the superintendence of the most eminent surgeons who existed prior to the first French revolution. His passion for anatomical pursuits was developed at a very early period of his professional career: having witnessed the anatomical museums of Dr Hunter, and those on the continent, he was anxious to form one of a similar nature; and it is well known to the scientific public to what perfection he brought the object of his ambition.

He commenced his career as a professor of anatomy, pathology, and surgery, when about twenty-six years of age; and it is worthy of remark, that the house which contained his museum, theatre, &c., had been previously tenanted by the Hon. Mr Cavendish, the philosopher; and it was in Blenheim Street, Great Marlborough Street, that this gentleman made his important discovery of hydrogen gas. In consequence of his having reduced the fee for a perpetual admittance to his anatomical instructions, from twenty guineas (the usual sum charged by his contemporary professors) to ten, he was looked upon as an innovator on the established rule; which caused his school to be viewed with a jealous feeling; and this was increased, on his determining to deliver a summer course of lectures, justly conceiving, that the science of anatomy could be as well taught in the summer as during the winter season. From the hour of the lecture being seven in the morning, his class was in general composed, at this period, of apprentices and medical assistants, who were, by their avocations, prevented from attending the three-o'clock or afternoon course. Hence Mr Brookes may justly be considered as the founder of the cheap schools of anatomy and medicine, which are now so prevalent in London and the principal provincial towns. As a lecturer, he was extremely minute in his description of the various organs under demonstration, and was considered by some students as rather tedious in consequence. His minuteness was a general proverb throughout the medical profession, and to his credit be it spoken, that he rarely had a student rejected by the court of examiners at the royal college of surgeons, for lack of anatomical information. Sir Astley Cooper has, on more than one occasion, complimented Mr Brookes, by stating that his pupils were by far the best anatomists of any school in London. And Mr Brookes, who frequently examined his pupils prior to their college examination, used to observe, "that, if a pupil passed his last examination, he could stand the test before any court of examiners in the kingdom." In general, a course of anatomical instruction occupies the lecturer seldom more than three months, but, in consequence of the extent to which Mr Brookes followed his descriptions of every part of the human frame, they generally required between five and six months for their delivery. From this cause, his summer course (as already stated), which generally began about the first week in June, at seven in the morning, was seldom concluded until the month of December, and we have known it extend to January; while his winter afternoon course commenced about the first of October, which in London forms the commencement of the *annus medicus*: so that the professor was in the constant habit of delivering two lectures daily for six months in the year. In addition to these, his forenoon labours in the dissecting-room occupied about three hours of his time; during which period, he demonstrated to each pupil the parts he had dissected; and this alone, particularly in the winter season, was any thing but a sinecure; in fact, it was a far more laborious task than the mere delivery of a lecture. Besides which, he injected and prepared the subjects for dissection. The preservation and preparation of the specimens of his museum likewise occupied a great share of his time, as he was almost daily adding to its valuable contents. His museum may be justly ranked as second only to that of the late John Hunter (now in the royal college of surgeons, in London,) in its number of specimens; but the osteological preparations far outnumbered those in the Hunterian collection. In fact, it was the admiration of all who beheld it: it was always open to scientific foreigners, and, on certain days in the year (generally one Saturday in a month), to the public at large, while private gentlemen were frequently granted admission on other occasions. Yet, to the disgrace of the British nation, this admirable monument of industry was, in his declining years, disposed of and dispersed by the hammer of the auctioneer; and that collection, which had cost him so much labour and anxiety, and upwards of £30,000, was sold for a mere trifle.

In 1826, in consequence of ill health, Mr Brookes was compelled to retire from his duties as a teacher of anatomy. As a teacher, his perseverance, kindness, and zeal for the welfare of his pupils rendered him universally beloved by them; and his kindness never failed to distinguish those students who were the most sedulous, as they were constantly rewarded by tokens of his regard and esteem. In 1821, his portrait, painted by Mr Phillips, R. A., was presented by his class, as also, on a subsequent occasion, a piece of plate, as proofs of their affection. In 1823, he addressed a memoir to Sir Astley Cooper, as to the propriety of applying to the Government to permit the importation of dead bodies for dissection from the continent: this document he produced before the select committee of the House of Commons, on being examined relative to the introduction of a bill legalizing dissection. It will be found published in the report of the committee for 1828. During the scarcity of dead bodies, he has been frequently known to give, in the winter season, sixteen guineas for a single subject, charging his pupils but eight, and presenting them with his trouble and expense of preparation and injection. With the exception of Professor Blumenbach, of Gottingen, we are unacquainted with the name of any teacher who, for the long space of forty years, solely devoted his attention to anatomical instruction. In the summer season, he was engaged from five in the morning until a late hour in the evening, during which time his dissecting rooms were open, and himself easy of access, whenever his pupils required his presence.

The last appearance of Mr Brookes as a lecturer was in 1827, when he delivered a very interesting course of lectures at the rooms of the Zoological Society, in Bruton Street, Bond Street, on the anatomy of a magnificent ostrich, which had been the property of George IV., who, on its decease, presented it to the society. His discourses were attended by a crowded and fashionable auditory, and were illustrated, not only by the dissected portions of the bird, but by beautiful prepared specimens from his then existing museum.

On the 25th of June, 1831, Mr Brookes took an affectionate farewell of his former students and friends, at a public dinner to which they had invited him. On this occasion, he boasted, with a becoming pride, the rank which many of his former pupils now held in society, not only in their professional vocations, but for their great success in cultivating the different branches of the collateral sciences. He suddenly expired, on the 10th day of January, 1833, at his residence in Great Portland Street, aged seventy-two years.

BROUGHAM; a parish in the county of Westmoreland, with a population of 171. There was formerly a village of the same name, but it is extinct. The name is said to be derived from the Saxon words *Burg-ham* signifying *castle-town*, this having been the site of the Roman station *Brovonacum*. Here are the remains of an ancient castle. In the vicinity, on a wooded eminence on the east side of the Lowther, stands Brougham-hall, the seat of Lord Brougham and Vaux.

BROUGHTON, Thomas Duer, of the honourable East India Company's service, M.R.A.S., was the son of the Rev. Thomas Broughton of Bristol, and was educated at Eton. From thence he went out to the Bengal army of India, having embraced the profession of arms. He followed it with ardour, and whilst yet a subaltern he was actively engaged in the memorable siege of Seringapatam, which, on the 4th of May, 1799, overthrew the dynasty of Tippoo Saib, and conquered his empire. He was afterwards appointed commandant of the Cadet corps, a sort of college formed to receive the cadets, and teach and discipline them on their first arrival in the country, an office obviously requiring sound judgment and discreet management. But in December 1802 he received an important staff appointment, that of military resident with the Mahrattas. Here, too, he displayed that firmness and discretion so essential to a military man when placed in circumstances at once delicate and difficult. At a later period he was appointed to the command at Java; this, however, he did not hold long, as the island was given to the Dutch by the treaty. In the command of posts and battalions he was more than once honoured with public thanks from the governor, and with affectionate and gratifying addresses from the officers under his command. Colonel Broughton was fortunately in such a position in the service as to reap great advantages from an important reform made in the company's army some years back. Before this great change a colonel seldom got a regiment until he was an old man. Now every regiment was divided, and each battalion was made into a separate regiment. Thus, though the emoluments were greatly reduced, yet they were reached perhaps ten years sooner. Thus he became the colonel of a regiment, with its emoluments, at an early period of life. After this step he returned to England; but here, though quite at ease, an active mind, a warm and ardent temperament, could not remain long unemployed. He was honoured with the distinguished post of honorary secretary to the royal Asiatic society, and he was selected, not elected, a member of the Athenæum by a power specially vested in the committee, and the Mendicity society, one of the most useful in London. The schools, &c. of Marylebone, can well attest the activity of his mind and the warmth of his heart. After his return to Europe he visited almost every part of the British dominions, and every part of the south of Europe, worth attention. Colonel Broughton's first essay as a literary man was a free translation of a French novel, written by a warm admirer of Rousseau, called "Edward and Laura," in two volumes, published in 1809. He afterwards published a very valuable work upon the Mahrattas, written during his residence with that extraordinary people, in which he has thrown much light on their personal and curious history. He made himself master of the Persian language, and published a translation of some interesting and often beautiful Persian poetry, and also some specimens of Hindoo poetry; both these latter works were published by Mr Murray. During the latter years of his residence in India, the climate, which had not touched him before, affected him, and his health suffered. Whilst on a visit in Surrey, in the month of October, 1835, whither he went in good health, he was attacked with a fatal illness which carried him to the grave, after only a few days' illness, and at fifty-seven years of age. Colonel Broughton married a daughter of the late Mr Chamier, who was associated with Lord William Bentinck in the government of Madras, and whose son is now chief secretary to the same presidency. He left no issue.

BROWN, Robert, well known by his excellent agricultural writings, was born in the village of East Linton, Haddingtonshire, where he entered into business: but his natural genius soon led him to agricultural pursuits, which he followed with singular success. He commenced his agricultural career at Westfortune, and soon afterwards removed to Markle. Mr Brown was a contemporary and intimate acquaintance of the late George Rennie, Esq., of Phantassie, and to the memory of them both agriculture owes a tribute of gratitude. Mr Rennie chiefly confined his attention to the practice of agriculture; and his fine estate furnished evidence of the skill with which his plans were devised, and of the accuracy with which they were executed. While Mr Brown followed close on Mr Rennie in the field, the energies of his mind were, however, more particularly directed to the literary department of agriculture. His "Treatise on Rural Affairs," and his articles in the Edinburgh "Farmer's Magazine" (of which he was conductor during fifteen years), evinced the soundness of his practical knowledge, and the energy of his intellectual faculties. His best articles are translated into the French and German languages; and "Robert Brown of Markle" is quoted by continental writers, as an authority on agricultural subjects. He took an active interest in the public welfare, especially when rural economy was concerned; and by his death the tenantry of Scotland lost a no less sincere friend than an able and zealous advocate. He died at Drylawhill, East Lothian, on the 14th Feb. 1831, aged seventy-four.

BURDER, GEORGE, editor for many years of the "Evangelical Magazine," was born in 1752, and died May 29, 1832, at the house of his son Dr Burder, in Brunswick square, London. Mr Burder was for upwards of twenty years minister of West Orchard Chapel, Coventry; and for twenty-nine years, until within a few weeks of his death, he had officiated at Fetter-lane Chapel, London. He was the author or editor of the following publications: Bunyan's Pilgrim's Progress, with notes, 1786. Evangelical Truth Defended, 1788. Collin's Weaver's Pocket Book, or Weaving Spiritualized, 1794. Abridgement of Owen's Treatise on Justification by Faith, 1797. The Welsh Indians; or, a Collection of Papers respecting a People whose ancestors emigrated from Wales to America, in the year 1170, with Prince Madoc, and who are said now to inhabit a beautiful country on the west side of the Mississipi, 1797. The life of the late Rev. John Machin, formerly minister of the parish church of Astbury, Chesshire; with a recommendatory Preface, by Sir Charles Wolseley, 1799. Village Sermons, in six volumes, 1799—1812; a work which has been highly popular among his fraternity. Bunyan's Holy War with notes, 1803. Howel's History of the Holy Bible, enlarged and improved, 1805. Mather's Essays to do Good, revised and improved, 1807. Missionary Anecdotes, 1811. Henry's Family Bible, with improvements, in conjunction with the Rev. Joseph Hughes, 4to.

He was for many years secretary to the London Missionary society, which office he discharged gratuitously, and was extensively known as a man of unostentatious piety, enlightened benevolence, and considerable intellectual endowments.

BURNETT, GILBERT THOMAS, F.L.S. professor of botany to king's college, London, to the hon. company of apothecaries, and to the medico-botanical society; was born April 15, 1800. He was the son of the late Mr Gilbert Burnett, surgeon of Great Marylebone Street; and the grandson of Gilbert Burnett, Esq., of Laleham, in Middlesex; whose father was the Rev. Gilbert Burnett, or Burnet, rector of Coggeshill, in Essex, and minister of St James's Clerkenwell, in which church lie the remains of their common ancestor, the celebrated bishop Burnett. The early days of professor Burnett were passed at Laleham, under the careful training of his grandmother, a lady of uncommon mental energy. It was in this situation, on the green banks of the Thames, that he first imbibed those botanical impressions which determined his career, and which he afterwards perfected into science, so much to his own honour and the advantage of society.

He was afterwards articled to Mr Ewbank, an eminent surgeon and apothecary, whose good-will and friendship he acquired by his assiduous attention to his profession, and his excellent moral conduct. At the expiration of his articles he took to his late father's practice, with the full confidence of the patients; which practice he would probably have much extended, had not a predilection for his favourite science directed his aspirations to become a teacher of botany; seconded also as his inclination was by a public call for such instruction. He accordingly commenced his career therein by a course of lectures on medical and general botany, in the anatomical school of the celebrated John Hunter, at the theatre of medicine, in Great Windmill Street;—in which course he briefly discussed the *principles*, *relations*, and *purposes* of the science:—first, as regarded the philosophy of organization, with the comparative anatomy and physiology of vegetables; secondly, with regard to the arrangement of plants, and especially to the classifications of Linnæus and Jussieu; and finally, with respect to the properties and productions of vegetables, both medicinal and economical. Into this wide and comprehensive view of his subject, our young professor was led by the course of his philosophic studies; for, to his ardent mind and indefatigable research, nothing was left unnoticed or untried that might throw light upon, or forward, his favourite pursuit, and that to which all the [illegible] of his life had some reference and tendency. The lectures of Mr Burnett at the Hunterian theatre procured him the honorary appointment of professor of botany to the medico-botanical society, to which he was elected, much to the honour and advantage of that excellent institution. He now commenced the instructing of students in botany by herbarizing excursions during the summer months; combining the most agreeable and amusing with the most improving mode of instruction, by an immediate application to the science through nature—coupled with that amiable association with his pupils which at once secured their affection and attention. In the midst of these studies and occupations, including his practice as a surgeon, &c., and a regular course of lecturing at the schools of physic at St George's hospital, he still found opportunity, by a judicious regulation of his time, to write on his particular science; on which he contributed papers to various reviews and periodical publications; and several of such papers, of much interest to the botanist, are to be found in the journals of the royal institution, at the theatre of which he regularly delivered lectures on botany during several seasons, and contributed discourses from the stores of his various knowledge on subjects of patriotic and popular interest in connection with his science, at the evening conversaziones of that institution.

These various exertions in the science finally now established for Mr Burnett the well-[illegible] putation of an accomplished botanist and lecturer, he, on the opening of king's college, London, became a candidate for the chair of botanical professor to that new university, to which he was duly elected; and he commenced the duties of his new office by the delivery of its opening lecture, with great *éclat*, in the academic year of that foundation, 1831-2. Professor Burnett had now attained the height of his laudable ambition,—the point from which he could render botany most useful to society, his own advancement in the science, and his private emolument. Accordingly, his reputation as a lecturer on the science brought with his new appointment a numerous class of pupils, of whom he may be truly said to have had not only the admiration and respect due to an eminent teacher, but the genuine attachment due to his amiable manners. During the recesses from his college duties, and partly in the midst of them, professor Burnett found time for an extended social intercourse, a select but not extensive medical practice, the editing of the "London Medical and Surgical Journal," and other literary labours. It was during this season that he edited a new and beautiful edition of Dr Stephenson and Churchill's medical botany, in 3 vols. 8vo; and composed his two large volumes of *Outlines of Botany*. Not long before his death, and in a state of health rapidly declining, professor Burnett became a candidate, with other eminent botanists, for the vacant situation of professor of botany to the honourable company of apothecaries, and demonstrator of botany at Chelsea botanic garden; which appointments he obtained, with the unanimous approbation of the members of the society; and he delivered his first course of thirty lectures at their botanic garden during the summer of 1834. His death took place on the 27th July, 1835.

Professor Burnet was of a delicate and slender formation; rather small in person. His countenance was handsome and intellectual, and his eyes dark, sparkling, and expressive. He was altogether vivacious and intelligent, and infused those qualities into his lectures and literary compositions.

BURNEY, WILLIAM, LL.D. an eminent teacher; died Feb. 20, 1832, at the royal academy, Cold Harbour, Gosport, in his seventieth year. In early life Dr Burney established the royal academy at Gosport, which has flourished more than forty years, and many of our most distinguished naval and military officers have been educated under this accomplished scholar and worthy man, whose urbanity and [illegible] secured the esteem and regard of his numerous pupils. Dr Burney was the author of an extensive Marine Dictionary, and other valuable works; and was accustomed to record a series of excellent Meteorological Observations.

BURNS, OR INJURIES BY FIRE, are now [illegible] generally treated by the application of *cotton-*[illegible]. It is said that cotton was first used as a [illegible] for burns in America, and that the discovery [illegible] sanative properties was owing to accident. [illegible] child of a woman who was engaged in the [illegible] of cotton, happened, in some way or [illegible] get itself extensively burned with boiling [illegible]. The mother, in her agony, having no per[illegible] her at the time, laid the child down in [illegible] on the floor, which promised to be the [illegible] softest position, and hastened away to [illegible] medical assistance. The medical man of [illegible], however, was from home. The poor woman, on her return, found that the child had rolled about in the cotton and had become covered in the burned parts with a thick coating of it. The cotton appeared to have produced great relief of pain; the child had now ceased to cry and was actually cheerful. Some hours elapsed before the medical attendant arrived, but as the child continued cheerful and the cotton had become pretty firmly adherent to the sores, the mother would not allow of its being removed. Within the period of ten or twelve days the cotton began to drop off spontaneously; and in a fortnight from the receipt of the injury, the whole of it was detached, leaving a perfect cure,—the skin being without mark or contraction, and, in short, quite natural.

The cotton treatment has since had a pretty extensive trial in different parts of England and Scotland. As might have been expected, scientific observation has enabled medical men to point out the way in which the cotton may be most advantageously applied, and it has also enabled them to define the limits of its utility. The cotton should be applied to the burned parts as soon after the injury as is possible; and, if blisters have formed, they should not be opened. Where it can be done without incurring considerable delay, the cotton should be carded before its application into thin flakes. These flakes should be laid on the injured part, and piled one on the other until they form a soft covering, which, under high pressure, should be about an inch in thickness. A bandage should then be passed around the patient to prevent the cotton from falling off, but care must be taken not to draw the bandage tight or allow it to press the body. Its object is simply to retain the cotton in its place. After this, the first step, is taken, nothing remains to be done while the cotton is observed to *stick* to the surface of the injured part and to remain *dry*. Should any portion of the cotton, however, become *wet*, either through the discharge of water from the blisters, or the formation of purulent matter, and continue wet for a day or two, the attendant should, at the end of that time, pick the wetted cotton gently away, and supply its place with dry cotton. The general rule, consequently, is very plain. While the patient is free from pain, and the cotton dry and adherent to the surface of the burn, no change should be made; but should the cotton become wet at any part, and continue so for a day or two, the wetted portion is to be removed, and its place supplied with dry cotton. The treatment is to be conducted thus until the cure is completed.

The manner in which cotton acts in the cure of burns may be accounted for thus. It excludes the air and forms a warm and soft covering for the injured parts. Under this protection, the restorative powers of nature quickly repair the injury. But it is possible that cotton wool may have a sanative virtue beyond its mere softness and heat.

BURNS, ALLAN; a distinguished anatomist and surgical writer, was born at Glasgow, on the 18th Sept., 1781. His father was the Rev. Dr John Burns, minister of the Barony parish in that city, who held the situation for the long space of sixty-nine years, and died so recently as 1839, aged ninety-six. At the early age of fourteen, Allan entered the medical classes, and by his diligence and application, he was enabled two years afterwards to take upon himself the sole direction of the dissecting-rooms of his brother, Mr John Burns, who at that time was a lecturer on anatomy and surgery in Glasgow. From the excellent opportunities he here enjoyed for cultivating the study of anatomy, and from the enthusiasm with which he pursued his inquiries, he soon became distinguished as a practical anatomist. In 1804, having resolved to enter the medical service of the army, he went to London for the purpose of obtaining a commission; but previous to his making application for one, he received the offer of a situation in St Petersburg, of which he accepted, and accordingly he left London for Russia. The empress Catherine, having established in St Peterburg an hospital on the English plan, was desirous of procuring for its director an able British surgeon. For this office Mr Burns was named to her majesty.by his excellency Dr Creighton, as a gentleman in every way qualified; and the appointment was accordingly immediately offered for his acceptance, he at the same time being allowed six months of probation before any definite arrangement took place. Ere that time, however, elapsed, his love of country and home prevailed over the temptation of a lucrative engagement, and he left St Petersburg for Scotland in January, 1805, receiving from the empress, in token of good will, a very valuable diamond ring. On his return home, his brother having discontinued his lectures, he resolved to fill his place, and in the ensuing winter he commenced his career as a public lecturer on anatomy and surgery. As a teacher, he was zealous and eloquent. Possessing the most perfect knowledge of his profession, he was never at a loss in his descriptions, nor in want of materials for the illustration or elucidation of his subject. He had a happy talent for arresting the attention, and throwing around the dryest demonstrations a charm of which they could hardly be supposed susceptible. His perspicuity of manner could scarcely be surpassed. In his hands, the most intricate subject became clear and simple. But his career was not destined to be of long duration. Early in 1810, his health began to decline, and although he continued for two years longer to deliver lectures, it was often at the expense of great personal suffering. He died on the 22d of June, 1813.

Mr Burns's first publication was entitled "Observations on some of the most frequent and important Diseases of the Heart; or aneurism of the thoracic aorta; or preternatural pulsation in the epigastric region; and on the unusual origin and distribution of some of the large arteries of the human body: illustrated by cases." This appeared in 1809, 8vo. His second publication was entitled, "Observations on the Surgical Anatomy of the Head and Neck: illustrated by cases." This appeared in 1812, 8vo. Both these works, which embrace all Mr Burns's separate publications, are held in the very highest estimation by the profession. An edition of the latter was published in America, with a life of the author, and additional cases and observations, by Granville Sharp Pattison, professor of anatomy in the university of Maryland. From that life we have drawn the present brief notice. Mr Burns, it may be added, contributed two Essays to the Edinburgh Medical and Surgical Journal, one on the anatomy of the parts concerned in the operation for Crural Hernia, and the other on the operation of Lithotomy.

BURTON, Edward, D. D., regius professor of divinity in the university of Oxford; canon of Christ church; and rector of Ewelme, in Oxfordshire, was born February 13, 1794, at Shrewsbury, in which city his father, major Edward Burton, was then resident. He was educated at Westminster, but was never on the foundation; and, as a commoner, went to Christ church, of which house he was matriculated, May 15, 1812. Here, his remarkable application, his high talent, and exemplary conduct were soon noticed, and in the following year, a studentship was given him by one of the canons, on the express recommendation of the dean and chapter. In Easter, 1815, he was examined for his degree, and his name appears in the list of that term in the first class, both in classics and in mathematics. He took his degree of bachelor of arts Oct. 29, 1815; and soon after was ordained to the curacy of Tetenhall in Staffordshire, where he resided for some time in the zealous discharge of every duty connected with his profession. On the 28th of May 1818, he proceeded master of arts, and passed the greater part of that and the following year on the continent, visiting every place worthy of observation in France and Italy, inspecting the public libraries, collating MSS., and obtaining accurate information on all subjects connected with his favourite pursuits. Some idea of his research, as well as the extent of his inquiries, and the accuracy of his observation, may be formed from a perusal of his work on the Antiquities of Rome, which is perhaps the most useful, and at the same time the least pretending, publication concerning that interesting city. In 1824, Mr Burton accepted the office of select preacher in the university. His sermons were distinguished not more by their theological learning, acute criticism, and sound and at the same time candid argument, than by their unaffected piety, and that genuine Christian feeling which robs even religious polemics of all their bitterness. On the 12th of May, 1825, he married Helen, daughter of archdeacon Corbett, of Langor Hall, Shropshire; and immediately after went to reside in Oxford, where he began to take a prominent part in academical matters. He was nominated a public examiner in 1826. In 1827, on the promotion of Dr Lloyd to the bishopric of Oxford, he became his examining chaplain, and the following year was chosen to preach the Bampton Lectures. It will be seen, too, from the list of his works, that during the whole of this period his active mind was fully employed. A pamphlet on the absolving power of the Romish Church, his Testimonies of the Ante-Nicene Fathers, and the publication of his friend Dr Elmsley's notes on some of the plays of Euripides, prove that his life was anything rather than an idle one. On the 27th of November, 1828, he proceeded to the degree of bachelor in divinity, as a grand compounder.

In the summer of 1829, the university was deprived of the able services of her professor of divinity, by the premature death of Dr Lloyd, then also bishop of Oxford; and Mr Burton was immediately nominated to succeed him. Sir Robert Peel could not have recommended, nor the minister have made, a more judicious selection, nor one that gave greater satisfaction to the university at large, and to Christ church in particular, for all persons were agreed on the peculiar fitness of Mr Burton for the divinity chair. To the bishop of Oxford, the students in divinity were first indebted for an admirable and most effective addition to the usual mode of obtaining theological information—the establishment of *private classes*, in addition to his public lectures. This plan Dr Burton (for he proceeded to his degree of doctor in divinity, June 26, 1829) followed up with equal zeal and diligence, devoting much of his time to the instruction of the future candidates for holy orders. Dr Burton's death took place at Ewelme, on the 19th of January, 1836. Dr Burton was appointed a delegate of the university press on his becoming professor of divinity. Of his utility and active exertions in that capacity, the following list of his publications bears ample testimony:—An Introduction to the Metres of the Greek Tragedians. 8vo. Oxford. This we believe was his first publication, and appeared in 1814. A Translation of a part of Aristotle's Ethics, afterwards completed by the present head master of Winchester School. 8vo. 1815. A Description of the Antiquities and other Curiosities of Rome. 8vo. Oxford, 1821. Second edition, with additions, 2 vols. 8vo. London, 1828. The Power of the Keys; or, Considerations upon the Absolving Powers of the Church, &c. 8vo. Oxford, 1823. Testimonies of the Ante-Nicene Fathers to the Divinity of Christ. 8vo. Clarendon Press, 1826. And again, with considerable alterations, 1829. The Works of George Bull, D.D., Bishop of St David's, collected and revised: to which is prefixed his Life, by Robert Nelson, Esq. 4 vols. 8vo. Clarendon Press, 1827. An Enquiry into the Heresies of the Apostolic Age, in Eight Sermons, at the Lecture founded by the Rev. John Bampton. 8vo. Oxford, 1829. An Attempt to ascertain the Chronology of the Acts of the Apostles, and of St Paul's Epistles. 8vo. Oxford, 1830. The Greek Testament, with English notes. 2 vols. 8vo. Oxford, 1830; and again 1835. Testimonies of the Ante-Nicene Fathers to the Doctrine of the Trinity and the Divinity of the Holy Ghost. 8vo. Clarendon Press, 1831. Remarks upon a Sermon preached [by Mr Bulteel of Exeter College,] at St Mary's, Feb. 6. 1831. 8vo. One Reason for not entering into Controversy with an anonymous Author of Strictures. 8vo Oxford, 1831. Thoughts on the Demand for Church Reform. 8vo. Oxford, 1831. Advice for the proper Observance of the Sunday. 12mo. London, 1831; and again in 1834. Lectures upon the Ecclesiastical History of the First Century. 8vo. Oxford, 1831. Lectures upon the Ecclesiastical History of the Second and Third Centuries. 8vo. London, 1833.—These Lectures were collected and printed in 2 vols. 8vo. Oxford, 1833, under the following title, "Lectures, &c. from the Crucifixion of Jesus Christ to the Year 313.' Sermon before the University of Oxford, on the 21st of March, 1832, being the day appointed for a general humiliation. 8vo. Sermons preached before the University of Oxford. 8vo. London, 1832. They are twenty in number, and were preached between 1825 and 1831. The Benefit of the Sacrament of the Lord's Supper explained. 12mo. London, 1832; again in 1834. Pearson on the Creed. A new edition, revised and corrected. 2 vols. 8vo, University Press, 1833. Thoughts on the Separation of Church and State. 8vo. London, 1834.

Upon the death of Dr Elmsley, Dr Burton published a new edition of the Medea and Heraclidæ of Euripides, with Notes selected from the MSS. of that distinguished scholar. 8vo. Clarendon Press, 1828. When his friend and patron, bishop Lloyd, died, he superintended an edition of the Greek Testament, with parallel passages, and the Canons of Eusebius, commenced by that prelate, 12mo. 1829; as well as completed an edition of Cranmer's Catechism, the preparation of which had been made by him, but the work left unpublished. They were both published at the university press; the latter in 1829, 8vo. He was also at the time of his death engaged in preparing for the press a series of tracts in defence of the church of England, more especially against the errors of popery. Jeremy Taylor's Dissuasive was intended to form the first of the series, and actually printing; and he had also undertaken the superintendence of a new edition of bishop Beveridge on the thirty-nine articles, with the addition of that prelate's observations on the last six articles, supposed to have been lost, but lately recovered, and now in MS. in the library of the president of Magdalen.

BUSHMILLS; a market-town in the county of Antrim, Ireland, six miles N. E. by N. from Coleraine, and 125 N. from Dublin. It is the general place of resort for persons visiting the Giants' Causeway, about two miles distant. The town is thriving, and it owes much of its prosperity to the exertions of Sir F. W. Macnaghten, bart., whose seat adjoins it. It already contains a commodious hotel, a large distillery, paper and flour mills, &c. Population above 500.

BUTLER, Charles, an eminent lawyer and voluminous writer, was born on the 15th of August, 1750, at the house of his father, Mr James Butler, who carried on the trade of a linen draper in Pall Mall. His uncle was the Reverend Allan Butler, the author of "The Lives of the Saints," and several other able works. Bred up in the Roman Catholic religion, he was in the first instance sent for education to an academy kept by a Roman Catholic at Hammersmith, and afterwards removed to an English Catholic college in the university of Douay, under the care of secular priests. Having highly distinguished himself at Douay, he returned to England, and was entered at Lincoln's Inn in the year 1775. Soon afterwards he became the pupil of Mr Holiday, well known as a conveyancer of that day. When he quitted the chambers of Mr Holiday, the legal prospect for one holding his religious opinions was sufficiently bounded. A Roman Catholic could not be called to the bar, or hold any official situation whatever. Under these circumstances, he selected that branch of the law which he considered as most suited to his taste, and the exercise of his abilities, and commenced practice under the bar as a conveyancer. He soon obtained a very considerable practice, and acquired the esteem and respect of his profession: indeed his mild and conciliatory manners, his varied information, and his extensive knowledge, could not fail to make his acquaintance and friendship much sought for.

The following is a list of his principal publications:—"Essay on Houses of Industry," published in 1773. "An Essay on the Legality of impressing Seamen." "Notes to Coke upon Littleton," his most celebrated professional work. "*Horæ Biblicæ*," 1797. There have been five editions of the *Horæ Biblicæ*; and it forms the first volume of Mr Butler's collected works. It has also been translated into French. "*Horæ Juridicæ Subsecivæ*; being a connected series of notes respecting the Geography, Chronoloy, and Literary History of the principal codes and original documents of the Grecian, Roman, Feudal, and Canon Laws," 1804. This valuable work was reprinted in 1807, and is included in the second volume of Mr Butler's works. "Succinct History of the geographical and political Revolutions of the Empire of Germany, or the principal states which composed the Empire of Charlemagne, from his coronation in 800 to its dissolution in 1806; with some account of the imperial house of Hapsburgh, and of the six secular electors of Germany; and of Roman, German, French, and English nobility," 1806. Of this work there were three editions. "Essay on Contingent Remainders and Executory Devises;" with notes, 1809. Mr Butler was a constant advocate of his own religious community; although he was in some respects so opposed to the more rigid portion of it, that bishop Milner, on one occasion, angrily spoke of him as "a decided enemy to the hierarchy of his church." His earliest writings connected with his religious party were in the three blue books privately circulated among the Roman Catholics in 1790–1792, and which were jointly written by Mr Joseph Wilkes, a benedictine monk, and Mr Butler. "An Historical account of the Laws respecting Roman Catholics" was published by Mr Butler in 1795. "A Letter to an Irish Nobleman on a proposed Repeal of the Penal Laws against the Irish Catholics;" and "A Letter to a Nobleman on the Coronation Oath," both in 1801. "A Letter to a Catholic Gentleman on Bonaparte's projected Invasion," 1803; and "A Letter to an Irish Gentleman on the fifth Resolution of the English Catholics, at their meeting, January 31, 1810." In 1813, when a vigorous effort was made for the removal of the restrictive laws, Mr Butler published an "Appeal to the Protestants of Great Britain and Ireland;" several thousands of which were sold or circulated. In 1815 Mr Butler delivered an "Inaugural Oration, on occasion of the ceremony of laying the first stone of the London Institution:" it was published at the request of the managers, and he had the honour of being appointed standing counsel to the establishment. He subsequently drew up the act of parliament which secured its prosperity. He soon after published his "Historical Memoirs of the church of France, in the reigns of Lewis XIV., Lewis XV., Lewis XVI., and the French Revolution," in one volume, octavo. The same studies led him to several biographical works, which were published in the following order:—"The Life of Fenelon, Archbishop of Cambray; to which are added, the Lives of St Vincent of Paul, and Henri-Marie de Boudon; a Letter on Ancient and Modern Music; and Historical Minutes of the society of Jesus," 1810, 8vo. "The Life and Writings of J. B. Bossuet, bishop of Meaux," 1812. "The Lives of *Dom. Armand-Jean le Bouthillier de Rancé*, of the Monastery of *La Trappe*; and of *Thomas à Kempis*. With some account of the principal religious and military orders of the Roman Catholic church," 1814, 8vo. "Biographical account of the chancellor *l'Hôpital* and of the chancellor *d'Aguesseau*, with a short historical notice of the Mississippi Scheme," 1814. Mr Butler's subsequent works were, "An historical and Literary account of the Formularies, Confessions of Faith, or Symbolic books of the Roman Catholic, Greek, and principal Protestant churches," 1816, 8vo. "Historical Memorials respecting the English, Irish, and Scottish Catholics, from the Reformation to the present Time," 1819, 2 vols. 8vo. "Dissertation on Mystical Devotion;" published in the Retrospective Review, 1820. "An Inquiry, whether the declaration against Transubstantiation, contained in act 30 Charles II., could be conscientiously taken by a sincere Protestant," 1822. "Reminiscences of Charles Butler, Esq., of Lincoln's Inn," (chiefly consisting of the history of his literary labours, and additional reflections on the same subjects,) 1822; second volume, 1827. "A continuation of the Rev. Alban Butler's Lives of the Saints to the present time, with some Biographical accounts of the holy family, Pope Pius VI., cardinal Ximenes, cardinal Bellarmine, Bartholomew de Martyribus, and St Vincent of Paul: with a republication of his Historical Memoirs of the society of Jesus," 1823. "The book of the Roman Catholic church; in a series of Letters addressed to Robert Southey, Esq., on his 'Book of the Church,'" 1825, 8vo. "The Life of Erasmus, with Historical Remarks on the state of Literature between the tenth and sixteenth centuries," [illegible] "The Life of Hugo Grotius; with brief minutes of the civil, ecclesiastical, and literary history of the Netherlands," 1826. "Reply to the Quarterly Review, on the Revelations of *La Sœur Nativité*," 1826. "A Letter on the Coronation Oath;" [illegible] 8vo. "A short reply to Dr Phillpotts' Answer (in his 'Letters to a Layman') to Mr Butler's Letters on the Coronation Oath," 1828, 8vo. "A Memoir of the Catholic Relief Bill, passed in [illegible] being a sequel and conclusion of the 'Historical Memoirs of the English, Irish, and Scottish Catholics,'" 1829, 8vo. "Memoir of the Life of *Henry-Francis d'Aguesseau*: with an account of the Roman and canon law," 1830. Two works which Mr Butler commenced and left unfinished, were a "Life of Christ, or Paraphrastic Harmony of the Gospels;" and a "History of the Binomial Theorem." He mentions in his "Reminiscences" that some of his happiest hours of study were those devoted to mathematics; but that he diverted himself from them because he found that they interfered with his professional duties.

Mr Butler's habits of life were remarkably temperate and regular; and his application to intellectual pursuits was unremitting. He married a lady of the name of Eyston, and left two surviving daughters; the elder married to Colonel Stonor, the younger to Andrew H. Lynch, Esq., a chancery barrister. He preserved to the last the [illegible] of his mind; although his bodily health had much declined. His last illness, however, was of short duration. He died at his house in Great Ormond Street, on the 2d of June, [illegible] aged nearly eighty-two.

BYLAND ABBEY, in the north riding of Yorkshire. Byland Abbey appears to have been founded in the twelfth century, by Roger de Mowbray, at the instance of his mother. The abbot and twelve monks of Furness abbey, in Lancashire, having been disturbed by the incursions of the Scots, fled to York, where they were for some time entertained by the archbishop, by whom they were recommended to the protection of De Mowbray. Being a minor, however, his mother received them at her castle, and she afterwards sent them to a near relation of her own, who had been a monk at Whitby, but who then led an eremetical life at Hode. Here she supplied them with necessaries until her son attained his majority, when he granted them a sufficient portion of land for their support. The monks soon afterwards procured, at a general chapter of their order, held in France, an exemption from their former subjection to Furness. They remained at Hode several years, when, on the ground that their former grant did not afford them sufficient space, the church and town of Byland were granted to them for the purpose of building an abbey. Here they were too near the abbey of Rievaulx, being within the sound of its bells; and as there were some other inconveniences attached to the place, De Mowbray granted them another piece of land, on which to erect their monastery; and they then built a small church, a cloister, and houses. Their possessions were soon considerably increased, and they added to the value of them by clearing the woodland and draining the marshes. They removed, in 1177, a little to the eastward, where the abbey of Byland was built and dedicated to the virgin Mary.

Byland abbey was not included in the number of monasteries which were first dissolved, and by the king's letters-patent, dated January 28, 1537, it was refounded; but two years afterwards it was surrendered, when the abbot and monks received pensions. There were seven bells in the abbey, and it contained 516 ounces of plate. The lead which was stripped off the building amounted to 100 fodder, and, with the bells and plate, was sold for the king's use.

All that remains of Byland is comparatively a fragment, but it is sufficient to show that the abbey must have been a fine specimen of church architecture. The doorway is richly ornamented and the windows elegantly formed. The population of the township of *Byland-cum-Membris*, in the parish of Coxwold, amounted in 1831 to 365.

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CABBAGE-TREE; a splendid tree, to be found in the West Indies, the *Areca Oberacea* of Linnæus. The trunk is usually about six or seven inches in diameter, and it grows straight as an arrow to the height of 150 or 200 feet. The substance of the tree, for about two or three inches in depth, is of a dark colour, and extremely hard and solid; within this is a rather white pith intermingled with small veins of a more ligneous nature. The hue of the bark resembles that of the ash, and is faintly marked at the distance of every four or five inches by the *vestigia* of the branches that have fallen. The appearance of the bark continues the same till within about twenty or thirty feet of the summit of the tree, where it changes to a beautiful deep sea-green, which colour prevails to the top. About five feet above the commencement of this colour, numerous branches encircle the stem, the lowermost spreading horizontally with great regularity, while the superior branches incline wavingly downwards with all the graceful elegance of so many plumes of feathers. The branches, which attain when full grown a length of about fifteen feet, are closely set on the stem alternately rising one above another. Their broad curved sockets completely surround the body of the tree, which is again visible among the upper branches, and is there enveloped in an upright green conic spire, which beautifully terminates its majestic height. On the upper side the branches are slightly grooved and rounded beneath. An immense number of pinnated leaves proceed from the branches, some of which are three feet in length and an inch and a half in breadth, gradually narrowing towards their points, and decreasing in length as they approach the extremities of the branches. The upper side of the leaf is smooth and shining—a strong and prominent rib in the middle of each affords it support on the lower side. It is part of the economy of this tree that the inferior or lower branch drops off monthly, bearing with it an exfoliated circular lamina of the green part of the stem; whenever this occurs, the green conic spire which arises from among the superior branches, partially bursts and sends forth a young branch, which remains the uppermost till the same process is again renewed, so that the spire, the common parent of all, thus continually supplies the loss of the lower branches, and the beauty of the tree remains undiminished. The green-coloured part of the stem differs not only in hue but in substance from that of the other part, as it is formed of several *laminæ* or separate layers of a tough bark of a like nature, about a quarter of an inch in thickness, which are arranged closely over each other. All the branches, as they successively grow to be old, are united by the broad socket of the footstalk to this outer *lamina* or layer; some time before the lower branch is quite withered, the green circular layer, which before appeared a solid part of the tree, divides vertically, preparatory to its falling off with the branch to which it is strongly attached, leaving the next succeeding layer apparently a constituent part of the tree. The first, second, and third, and sometimes the fourth of these *laminæ* are green on the exterior and white within. The remainder of them have the outer side of a bright lemon colour, and the interior white. The part called the cabbage consists of the inner snow-white flakes, which contain a considerable portion of oil; they have something the flavour of an almond, and are esteemed a sweet and agreeable esculent; they are eaten raw, fried, or boiled, and, when they have undergone the latter process, are not unlike cabbage. Cutting the cabbage destroys the tree, which may be the growth of half a century. The cabbage is consequently a dish principally seen at entertainments, and two negroes are usually dispatched to the mountains where these trees abound, to cut what are required. The blossom displays itself at that part of the stem of the tree where the two colours unite. On its first appearance it is a husky *spatha*, growing to a length of about twenty inches, which is full of small white stringy filaments, with alternate protuberant knobs, not unlike a fringe of coarse white knotted thread; farinaceous yellow seed in embryo, resembling fine saw-dust, is abundantly dispersed among the filaments, which, after they are cleared of this dust, are converted into an excellent pickle. If the *spatha* is not cut young for this purpose, when ripe it bursts, and the filaments become ligneous with a bushy growth, consisting of many small leaves, which produce a considerable number of small oval thin-shelled nuts, about the size of unhusked coffee berries. The soft part of the leaves of this tree being removed, the inside texture is spun in the same manner as hemp or flax, and is used for cordage, fishing-nets, and things where strength is desirable. From the hard outside of the stem, laths for houses are cut, which are of great durability.

CAFFRES (*a*.) The Caffres, near the Cape of Good Hope, have for many years been suffering from their contact with civilized men. In the parliamentary reports upon this subject, we find by the evidence of several respectable and important witnesses, that, in some instances, the Caffres are to be considered as having had hard measure dealt out to them by the colonial authorities. This was more especially the case, according to the testimony given, as regarded one chief of the Caffres, named Macomo, a man of most remarkable character and talents. The Caffre people, it must be observed, though they acknowledge one nominal head or king, are in reality ruled by various independent chiefs, and of these Macomo was one of the most powerful. His father and predecessor Gaika had been possessed of much greater power and wider territories than the son, but had found himself necessitated to yield up a large portion of his lands to the colonists. Macomo received no education, all the culture which his mind ever obtained being derived from occasional intercourse with missionaries, after he had grown up to manhood. From the period of Gaika's concessions in 1819, up to the year 1829, Macomo and his tribe dwelt upon the Kat river, following their pastoral life in peace, and cultivating their corn-fields. Suddenly, in 1829, Macomo and his people were ejected from the lands on the Kat river, on the plea, that, by an old treaty of Gaika, these lands had been ceded to the colony. Macomo retired, almost without a murmur, to a district farther inland, leaving the very grain growing upon his fields. He took up a new position on the banks of the river Chumie, and here he and his tribe dwelt till 1833, when they were again driven out to seek a new home, almost without a pretence, if we may judge from the reports, to justify the expulsion. On this occasion, Macomo did make a remonstrance in a document addressed to an influential person of the colony, Dr Philip, who vouches for its authenticity. In the whole of this letter—this savage Caffre's letter—there is (says Dr Philip) "a beautiful simplicity, a touching pathos, a confiding magnanimity, a dignified remonstrance, which shows its author to be no common man."

He mentions in his appeal, that he had not only restored, on application, the cattle taken by the unruly among his own dependents, but had paid back to the colonists the property stolen by those with whom he had nought to do—all for the sake of peace. One would think that after the colonists, whether by fair or by foul play, had twice unseated Macomo, and driven him to seek a new home, they would scarcely expect him to hold the same power as he had done, or make him answerable for the thefts of his Caffre brethren. Another appeal to Dr Philip, made some time after the chief's second expulsion, will show whether this was the case or not. "You have bad people," said Macomo, "at Grahams-town, (a colonial village.) Last time the governor was there, some of them stole the chain of his waggon; did he punish the town for the theft? When any thing is stolen and carried from one district to another, and the thieves cannot be found, is one of the magistrates visited with the punishment due to the thieves? I have guarded the frontiers of the colony to prevent the Caffres from stealing from the colonists, for many years, and what has been my reward? Driven from my country, I am now without a home for myself and my people, and the few cattle left to me are made answerable for every theft alleged to have been committed, though it may have been done by people who acknowledge no chief, and who live by thieving, and have no other abode than the bushes."

The next incident worthy of notice, in Macomo's history, occurred about a year after his second expulsion. To understand this, it must be premised that the grounds on the Kat river, from which he had been first expelled, in 1829, had been given up by the colony to a body of Hottentots, who had there formed a flourishing settlement. The Hottentots, being the aborigines of a district nearer the Cape than the Caffres, had long enjoyed the advantage of missionaries, &c.; and though their race had, as usual, dwindled away greatly in numbers, those who remained had advanced considerably in civilization. On the Kat river, then, in 1834, the Hottentots had a thriving settlement. Macomo, at that time a wanderer for the second time, had the magnanimity to visit the Kat river, and congratulate on their prosperity the new occupants of those lands, which were indubitably his own by right? He appeared at a missionary meeting, and addressed the assembled settlers.

Though the chief came by express invitation from the Kat river settlers, he had acted contrary to a colonial statute in entering colonial grounds; and, accordingly, scarcely was the assembly over, when a serjeant and several soldiers came to take Macomo into custody. The Caffre yielded without resistance, but this did not save him, according to the statement of the only credible witness present, from threats and insult. After carrying Macomo to the next post, the officials before whom he was taken set him free, finding nothing against him.

Macomo bore all that befell him patiently till the occurrence of a new evil in 1835. One of the patrol parties which were continually scouring his country, and of which he had again and again fruitlessly complained, at length committed an injury, which stung the Caffre chief beyond endurance. Xo-Xo, Macomo's brother, was wantonly shot in the head with slugs by a patrolling party, as he was peacefully remonstrating against the seizure of some Caffre cattle, which were under his charge. On application being made for redress of this cruel injury, Macomo and his friends were told that the colonial powers could not discover the officer who commanded the patrol. The Caffre chiefs lost all patience, and war, marked by many atrocities, followed the shooting of Xo-Xo.

In the year 1824, an English naturalist, in the course of a tour in Cafferland, had an opportunity of witnessing the justice and impartiality of Macomo in his capacity of judge. Being dissatisfied with the conduct of his slave, whom he had brought with him from the Cape colony, after some altercation and the infliction of a few blows with his *sjambok* (whip of rhinoceros hide), he carried the man before Macomo. Here the master and slave filed cross bills against each other. The slave produced witnesses to prove that his master had struck and abused him without cause: the master accused the slave of laziness, insolence and disobedience, and demanded that he should be punished by a severe flogging. Macomo, after hearing both parties, informed them that in Caffreland there were no slaves; he must, therefore, consider them merely as two men who had made a bargain with each other. "Now it appears," said he to the Englishman, "that you have struck this man and otherwise ill-treated him, but you can show no proof that he had injured you by offering you violence. I therefore declare your bargain at an end; he is free to go where he pleases; and you shall pay him an ox for the wrong you have done him." At this decision our countryman was highly incensed, and refused to submit. "He deserved punishment, not reward," said he, "for his insolence." "You have not proved that," said Macomo; "but had it been so, you should have brought him to me. Why do I sit here from sun-rise to sun-set, if need be? It is to decide between man and man, in cases where their anger blinds them, and hinders their judgment. If men use their hands in secret, instead of their tongues before the judge or the old men, whose life would be worth a husk of corn?"

The Caffres are admitted by most travellers, to be a well formed, decent-featured, and comely people. Their countenances are more European than African, although their hair is woolly and their colour dark brown. From their physical traits, Barrow has drawn the inference of an Arabic origin for them. He says, they have not the smallest resemblance to the negroes in either conformation or features, and that they differ from the Arab superficially in nothing but a deeper shade of complexion; and this theory is somewhat plausibly confirmed in the view of this writer by their nomadic habits, their hospitality, the shape of their habitations, and especially their scrupulous observance of the rite of circumcision. Pringle also supports this opinion, and so does Mr Kay; and they both adduce additional facts in apparent confirmation of it. There is nothing incredible, or even improbable in the theory itself, especially since it is well known that the wandering Bedouins have penetrated into almost every section of the continent, and have even planted themselves on the South African islands.

The apparel of the Caffres is made wholly of the skins of beasts, excepting those cases only where the customs of their civilized neighbours have been introduced among them. These changes have occurred at and about the missionary stations, and may generally be considered,—taking into view the attachment which all barbarians (as well as some partly civilized people) feel for old customs,—as a tolerably accurate indication of the most important intellectual and moral advances to which they commonly correspond.

The imitative propensity, as well as the communication, it is worth noting, are universally traits in the African character,—in which, by the way, they differ diametrically from the Indians,—and such as may be pronounced of the first interest, in reference to the competency and tendency of their possession to a state of civilization. This social disposition is indeed often carried to an extent which most travellers, if not missionaries, would call meddlesome and troublesome, not to say ridiculous. The Landers were not a little amused by a native who, after indulging his curiosity in an examination of their premises, baggage and all, not meeting with any thing which suited his taste better for a hat, finally encircled his cranium with the tin top of a jelly-pot, which was marked in large letters "concentrated gravy," and in that guise strutted about the encampment. The Caffre lady, in what may be called the chrysalis stage of transmutation, is not unfrequently seen promenading, in the vicinity of the mission-houses, with an English petticoat suspended from the neck instead of the waist, while the gentleman in attendance makes himself nearly as conspicuous, by sporting for a gala dress a pair of leather trowsers, surmounted by a check shirt. So they can get on any thing civilized, and keep it on, it matters little of what material the decorations may be made, or in what order they are fastened to the frame of the wearers. The aborigines of America have been much slower to imitate, and still more awkward also in the process. Witness the tradition transmitted by the Dutch party who first landed on Manhattoes. They made a donation of stockings and axes,—two valuable articles,—to the chiefs of the party which entertained them; and when the visit was repeated the next season, it was ascertained that the stockings had been converted into tobacco-pouches, while the axes were generally used for bosom-pins. In regard to the taste of the Caffres in matters of dress, ornaments of various kinds are extensively worn. These consist chiefly of beads, bones, feathers, and metallic bracelets, some thirty of the latter being occasionally seen on the arms of a great man, that is, a stout man; to all which the same dignified class often append, like the chiefs of the northern African tribes, the elegant embellishment of a cow's tail, swung from the knee.

The wealth of the Caffres consists of their herds and flocks, and their occupation, of the care of them;—there being probably no barbarous nation in the world, who are so systematically and scientifically devoted to grazing. The Caffre is never so happy, as when engaged in something calculated to increase the numbers or improve the appearance of his cattle. Such is his perfect acquaintance with his herd, that one of a thousand would be immediately missed; and he observes even the turn of the horns, or the slightest spots on the hide, so minutely, as to identify every individual almost infallibly after seeing them two or three times. Cattle-folds are constructed in every hamlet,—generally on the sunny side of a hill,—and are made of circular hedges, so compact as to protect the herd in winter from the cold in some measure, as well as from the wild animals which infest the country.

It is a curious illustration of the dignity which the grazing profession possesses in the view of the Caffres, that the cattle-field is always used as the place of public meetings and resort. Cattle constitute the currency in a great degree. Brides also are bought and sold for so many bullocks,—the proprietor in conversation frequently classing his wife and his pack-ox together, and estimating his property according to the joint amount of his herd and his daughters. Indeed his conduct towards his cattle is generally of a much more feeling character, than that which he sometimes evinces towards the partner of his bosom. Travelling, in the Cape colony, is performed by the Europeans mostly with the aid of oxen,—not less than four or five pairs being customarily attached to the unwieldy and lumbering waggons of the country,—and this practice again, as well as the price which the hides of the animals will bring in the civilized market, where one is at hand, adds to the value of the herd. Even the amusements of these people are derived from the same source. Racing young cattle is a favourite sport; and a part of the herd are trained to run at an astonishing rate, the oddity, if not beauty, of the appearance of this singular procession being doubtless not a little augmented by the Caffre custom of twisting the horns of the animals, while they are yet flexile, into all sorts of fantastical shapes. In a word, the ox is to the Caffre what the horse is to the Bedouin, or the deer to the Laplander,—shelter, vesture, carrier, family and food.

As might be expected, the principal aliment of these tribes is *milk*, which they use, like the Arabs, in a sour, curdled state; next to this article, boiled corn, (Indian)—for they cultivate, after a fashion, considerable tracts of fertile land; and more generally, a species of millet, also pumpkins, a kind of sugar-cane, gourds, fruits, and a few esculent roots of minor importance. The use of animal food is rare. Veal is objectionable in an economical view. Swine's flesh is rejected by the Caffres with abhorrence. The same is the case with the feathered tribe to some extent; none of them keep poultry of any sort; and eggs, as an article of food, are altogether contraband. Nay, Caffres will have nothing to do with the fish of the sea, which they for the most part regard as company only for snakes, so that, although they live almost wholly on or near the coast, the entire line of which abounds with the choicest fish, they are ignorant even of the art of casting a net. Neither will they eat elephant's flesh on any occasion, or even undertake, like the Hindoos, to domesticate that animal. This is the more remarkable, since he is always regarded as favourite game, and the passage of a herd in the neighbourhood of a hamlet is the signal for a general hue and cry. The tusks are the prize sought for. One of them falls to the lot of him who first pierces the game with his weapon, and the other to the chief of the party.

The Caffre does not, however, subsist wholly on vegetable food. The issue of the very elephant hunts, is usually celebrated by the feasting of the whole company upon an ox, which the successful hunter must furnish: and on other occasions a rhinoceros is despatched and devoured with as much *goût*, and as little ceremony or cookery, as if he were no bigger than a cabbage-head. Plain animal food, without salt, seasoning, or vegetable, is the greatest luxury the Caffre desires, and whenever any one kills a cow, it is an invariable custom throughout the country for all around to flock to the feast. Even this custom, however, rather indicates the infrequency of the use of such food, and on the whole it may doubtless be asserted safely, that it enters in a very small proportion into their regular subsistence. They are substantially a milk-fed nation; and if the physiologists, philosophers, or physicians have any theories to form or confirm in respect to the influence of such aliment on the character of the people with whom it prevails, they will probably find few cases where the data are more conveniently set before them.

Whatever the cause may be, the Caffres are generally admitted to be favourably distinguished from most barbarous nations by their mildness of disposition,—a position, which is not much contradicted by the existence of many harsh and cruel customs among them, rather appertinent to condition than character, and chiefly the immediate result of excessive superstition. Travellers generally, and especially missionaries, when known to be such, have always been treated with equal civility. This is confirmed by Barrow, Lichtenstein, Alberti, General Janssens, and others. Vasco de Gama originally named them *boa gente*,—"good people;" and, we have the testimony of the American captain Stout, of the ship Hercules, who, in his narrative of the shipwreck of his vessel on the coast, acknowledges that he found in the natives a hospitality, and received from them a protection, which on many of the shores of the polished nations of Europe he might have looked for in vain. "They made a fire to dry us, slaughtered a bullock, conducted us to a spring of water, &c. Such was the conduct of a people described as possessing no other semblance of the human character, than what they derive from their formation.' The reputation of the Caffres, for what this gentleman calls "the compassionate feelings which adorn humanity," may, on the whole, be considered as sufficiently established.

Their reputation for honesty does not perhaps rest on so good a foundation. In 1820, when Mr Kay visited Gaika, a celebrated and principal chief, with the view of obtaining permission to establish a missionary station in his country, (in which he succeeded) one of that potentate's wives contrived to steal a silk handkerchief from the pocket of a gentleman in the company, while he was engaged in negotiation with the husband. When Mr Kay went into Caffreland a second time, during the year last named, on the same errand as before, he gives a graphic description of an interview with the natives, which took place under the spreading boughs of a thorn-tree, on the banks of a solitary stream. The news of his arrival collected great crowds of visitors the next morning; and "their deportment was indeed friendly," says Mr Kay, "but circumstances soon convinced us, that they would consider it no evil to pick and steal whenever opportunity enabled them to do so." It is remarkable that a remedy was found in this instance by hiring one of the depredators, for the consideration of a few beads, to guard the exposed property of the tribe. This he did to the perfect satisfaction of his employers, and the missionary embraces with evident pleasure this occasion of stating, as an offset to the vice before charged upon the Caffre, that he never knew a single instance of his betraying his trust in any thing which was fairly and fully committed to his charge. "Do this," he adds, "and the utmost confidence may in general be placed in him."

It may, however, be remarked, that a thievish disposition is to some extent an almost universal trait of savage character. If the Caffre carries it farther than some others, by stealing, whenever he can conveniently, as Mr Kay somewhere states, from even his best friends of his own tribe, and inculcating this Spartan doctrine systematically in early life, upon the minds of his children, perhaps this pre-eminence may be fairly attributed in a great measure to the nature of the intercourse he has held for a century and a half with his powerful European neighbours, and especially to the depredations and other injuries he has suffered at the hands. Unprincipled war has degenerated into rapine on a smaller scale, rapine into robbery, robbery into larceny, and the habit thus acquired, particularly if deemed honourable, could not fail of being finally exercised with considerably less discrimination as to subjects, than might have been the honest intention in the outset. The African tribes generally, it may be noticed, have credit among travellers for no small share of this disordered acquisitiveness, and it is no where so rife as with those nations which have suffered most from the slave-trade. Crime, like disease, is contagious.

The government of the Caffres resembles that of the North American natives, and indeed that of most of the African tribes. It is ostensibly democratic, and substantially despotic, respectively in the highest degree; the personal superiority of the chiefs, and the advantage they derive from traditionary authority, being for the most part sufficient to enable them to treat their subjects with the most unqualified, though only customary, severity of discipline or imposition, as the case may be. By personal superiority, we mean simply such qualifications as create personal influence among such barbarians as the Caffres. The principal ones are energy and cunning.

The degradation of the female sex is considered by Dr Robertson the characteristic of the savage in all countries. If the degree of it fairly indicate that of the grossness of his barbarism, the Caffres must be low indeed in the human scale. No where are women, as such, such perfect slaves; no where are they so much used as mere chattels. Even the building devolves on them, as well as the digging, sowing, planting and reaping. The common price of a *bride*, is from five to ten head of cattle, though one of high birth, as the term is,—much as in civilised countries we speak of the descendant of a famous horse,—will bring five or six times that amount. After marriage comes endless drudgery, till the woman is fortunate enough either to be worn out with her slavery, or to be left a widow. Indeed, the tyranny of custom follows her even beyond that of her husband, for not only is she compelled, on his decease, to retire alone into the wilderness for a considerable time, under pretext of mourning,—whatever the season or her condition may be,—but, the only dowry allotted her from his property is a new garment from the hide of one of his oxen. Even the husband's hut is destroyed, so that the first care of the widow, on her return, must be to erect a new one, as usual, with her own hands. That the Caffre women, under all these circumstances, are able to maintain a reputation rather superior to that of savages generally, for purity of manners, is a marvel worthy of study. The triumph of nature, however, over man, does not last through life. Even the personal beauty of the young is here, as among the Western Africans described by Major Laing, pretty soon changed into that "disgusting ugliness."

All savages are more or less belligerent, and perhaps the South Africans, though less bloodthirsty than many other nations, are as much as any in this respect the victims of custom and circumstances. Their neighbours on all sides are barbarous like themselves, valuing their cattle as dearly, and as ready to fight for them, in defence or in depredation,—excepting only the frontier population of the [illegible] colony. The character of this frontier [illegible] may be known from its name. It is bad enough every where,—enough effectually to prevent the civilization of any conterminous people,—but here, the very *beau ideal* of bastard barbarism. The Caffres and the Dutch boors,—the latter extremely ignorant and rude, remote from the supervision of even the colonial government, and living in the most scattered manner conceivable,—have always been tugging at each others' throats. Unfortunately, the English, although only thirty-five years in possession of the colony, have during that short period outstripped, in their horrible oppression of the natives, even the cold-blooded cruelties of the Dutch boors of the last century. No British traveller has denied this, so far as we know, and most of them confirm it in explicit terms. Among these may be named Thompson, Barrow, Pringle, Dr Philip, and the Rev. Stephen Kay. Lieutenant Rose, in his Four Years in South Africa, states that official orders have been issued, "that all Caffres appearing within the proclaimed line should be *shot*." Again,—"the crime was individual, but the punishment general; the duty of the commanders was to destroy, to burn the habitations, and to seize the cattle; and they did their duty." "I hate the policy that turns the English soldier *into the cold-blooded butcher of the unresisting native*," &c. Such, is the testimony of an officer for some time stationed on the Caffre frontier, and officially cognizant of the transactions he thus describes.

CALCUTTA. (*a.*) An account showing the total amount of the import and export trade of Calcutta in 1836-37, and 1837-38; showing also the amount of the trade with each country, and the proportion *per cent.* which the trade with each country bears to the total amount of the trade.—*Bell's Review of the Commerce of Bengal for* 1836-37 *and* 1837-38.

IMPORT TRADE.

Countries.	1836-37.		1837-38.	
	Value.	Per centage.	Value.	Per centage.
EUROPE.	£		£	
United Kingdom, ..	2,240,471	60·1	2,059,483	50·6
France, ...	156,739	4·2	155.586	3·8
Denmark,..	—	—	3,998	—
Sweden,..	—	—		0·0
Portugal, ...				
Total Europe,	2,397,210	64·3	2,219,062	54·5
ASIA.				
Coromandel Coast,..	89,736	0·4	126,909	3·1
Ceylon, ...	3,537	0·1	8.367	0·2
Coast of Malabar, ..	246,265	6·6	171,538	4·2
Maldive and Laccadive Isles, ...	15,591	0·4	13,269	3
Arabian and Persian Gulfs, ...	86,403	2·3	123,474	3·0
China, ...	339,008	9·0	673,404	16·6
Singapore, ...	173,051	5·0	292.659	7·2
Penang and Malacca,	68,541	1·8	99,279	2 4
Java and Sumatra,	11,885	0·3	8,156	0 2
Manilla, ...	12	—	—	—
New Holland, ..	2,292	0·06	6,141	0 2
Pegu, ...	139.527	3·7	142,667	3 5
Total Asia, ..	1,175,842	31·6	1.665,876	40·9
AFRICA.				
Mauritius, ...	25,457	0·7	46,796	1·1
Bourbon, ...	10,506	0·3	13,406	0·3
Cape of Good Hope, ..	4.806	0·1	6,402	0·2
Total Africa, ..	40,769	1·1	66,602	1 6
AMERICA.				
North America, ..	103,531	2·7	72,944	1·9
South America, ...	9,208	0·3	45,465	1·1
Total America,	112,739	3·2	118,410	3·0
Grand Total,	3.726,560	100	4,069,950	100

EXPORT TRADE.

Countries.	1836-37. Value.	Per centage.	1837-38. Value.	Per centage.
EUROPE.	£		£	
United Kingdom, ..	2,837.997	42·3	2,719,222	41·8
France, ...	284,258	4·2	221,806	3·4
Denmark, ...	200			
Sweden, ...	—	—	10,673	0·2
Portugal, ...				
Total Europe,	3.122.455	46·5	2,961,701	45·4
ASIA.				
Coromandel Coast, ..	177,131	2·7	115,439	1·8
Ceylon, ...	14,205	0·2	6,489	0·1
Coast of Malabar, ..	278,066	4·1	277,122	4·2
Maldive and Laccadive Isles, ...	5,969	0·1	4,733	0·07
Arabian and Persian Gulfs, ...	159,861	2·4	157,267	2·4
China, ...	1,889.478	28·2	2,054.378	31·6
Singapore.	278,052	4·1	317,561	4·9
Penang and Malacca	48,416	0·8	65,220	1·0
Java and Sumatra,	24,515	0·4	14,715	0·2
Manilla, ...	58			
New Holland, ...	19,624	0·3	38.715	0·6
Pegu, ...	141,578	2·1	144,697	2·2
Total Asia, ..	3.036,974	45·4	3,196,487	49·07
AFRICA.				
Mauritius, ...	138,399	2·0	154,905	2·4
Bourbon, ...	40,836	0·6	55,670	0·8
Cape of Good Hope, .	11 344	0·2	22,078	0·3
Total Africa,	190,577	2·8	232,652	3·5
AMERICA.				
North America, ..	349,890	5·2	120.757	2·0
South America, ...	7,844	0·1	2,019	0·03
Total America,	357.735	5·3	122,756	2·03
Grand Total,	6,707,741	100	6,504,596	100

Internal Transit Duties.—A very great improvement has recently been effected in the domestic economy of our Indian empire, by the abolition of the duties on the transit of goods from one part of the country to another. These duties have existed in India from a very remote period; and, by obstructing the intercourse between its different districts, were singularly pernicious.

CALENDAR, (*a.*) or the division of time into years, months, weeks, and days. It is said, in the account of the creation, that the heavenly bodies were intended to measure times, seasons, days and years. In most cases, they do furnish us with the measures by which we go. The earth's revolution on its axis furnishes the measure of a day. A week is measured by the quarterly changes of the moon; the measure of a month is suggested by the time which it takes the moon to go through its circle of changes; a year is measured by the earth's revolution in its orbit round the sun.

There are some divisions of time now in use, which are not measured by the heavenly bodies; such are the subdivisions of the day into minutes and hours. To begin with the minutes. It is evident that such a division could not have been in use in very ancient times, because there was nothing to measure it. There was no timepiece invented; the only thing of the kind known was the dial; but so far from measuring minutes, that invention could not measure hours; the hours measured by sun-dials were not of fixed length, but proportioned to the length of the day. The dial of ancient times must have been a very imperfect thing. Herodotus gives us to understand that the Chaldeans were the inventors, and it was doubtless from their country, that the memorable dial of Ahaz, mentioned in scripture, was brought. But so slowly was the invention improved, that at the time of the first Punic war, a dial was brought to Rome, and set up in the forum, which was made for a different latitude, and no one in the city seems to have known any good reason, why it should not keep as good time in that latitude, as in the one for which it was made. They easily discovered that it was of no use to them; but what was the matter with it, or how to mend it, no one was able to tell.

The clepsydra or water-clock was a later invention, and might have answered the purpose, if the ancients had known the laws that govern the motions of fluids. The hour was measured very much as it is in the hour-glass, by the time which it took a given quantity of water to drop from the upper glass into the one below. But, unluckily, they did not know that when there was much water it would run out faster than when there was little, so that, though it would serve like the hour-glass to measure a single hour, it could not measure equal successive hours, nor could it measure the parts of a a single hour. The Persian clepsydra was different; a small metallic cup perforated at the bottom was placed on the surface of a larger vessel of water, where it filled gradually and sunk at the expiration of the hour. The only important use to which these water-clocks were applied, was to determine the length of pleadings in court houses. To prevent the advocate from speaking too long, he was allowed so much time, measured by the water-clock, and if he could not get through his argument in the time assigned, so much the worse for his client. In puritanical times preachers kept an hour-glass on the pulpit cushion, for the same purpose, but they by no means regarded the hint which it gave them.

As for clocks, they are entirely modern;—they are inventions of the monks of the middle ages. When we read of clocks, however, in early times, we must not think of any thing finished like our time pieces; they were probably such as the wooden clock of a pedlar might have looked down upon with disdain. These things show, that in extreme antiquity, they could not be acquainted with minutes, for want of something to measure them. When they spoke of a moment, they called it the twinkling of an eye, or glance of an eye; but this, of course, was no measure of time.

Passing then to the hours; we are not to suppose, when we see the word *hour* in ancient writings, that it had the same meaning then which it has now. In the writings of Moses, it seems to imply the time when any thing happened or was to happen,—as in the expression of our Saviour, "My hour is not yet come." In Homer and Hesiod the *hours* were the seasons of the year. In mythology, the hours were considered as goddesses who presided over the seasons of the year. In the book of Daniel, the word hour is used, but it seems to mean a moment, and not an extended portion of time: nor do we know of any passage in the Old Testament, where the word is used to denote any measured portion of a day. In the Apocryphal writings there are some; but these, compared with the books of the Old Testament, are quite modern writings.

How then, were the day and night divided? there must have been some divisions, to answer the purposes of life. They had some, which answered their purpose in a general way. The night in the Old Testament times, was divided into three equal parts, called the first watch, the second middle watch, and the third or morning watch of the night. In the New Testament, the order is different, because then, the Jews had adopted in this, as in many other things, the practice of the Romans. They then divided the night into four watches,—sometimes called by number, first, *second*, third and fourth, sometimes by name, evening, night, cock-crowing and morning. These were names often applied to the whole watch, though they properly designated only the times when each watch began. These must have been loose and arbitrary divisions; thus they could not tell when it was midnight, if it was cloudy; they only knew it by observing the ascension of a star. Cock-crowing, too, depended entirely upon the discretion of the poultry. When our Saviour tells Peter that he will deny him before the cock crows, he means to say that he will do it very soon. The Paschal supper was not eaten till it was dark,—much time was taken up with its forms;—after it was over, he walked with his disciples out from the city to the mountain,—and this walk must have taken considerable time, judging from the instructions, preserved by St John, which Jesus gave them upon the way. It must have been about midnight when he was arrested, and it was not half way from midnight to sunrise before the apostle denied him. Never was such a world of intensely interesting history, crowded into a few short hours.

The day was like the night, divided into four equal parts, in very ancient times, loosely called the morning, the heat of the day, the midday and the evening: this division was in use in our Saviour's time, though they had then begun to divide the day into what were called the Babylonian hours. This earlier division is referred to in the law; the Paschal lamb must be slain between *the two evenings*; an expression which would be perplexing, if we did not know that the evening began at the middle of the afternoon, and the name evening was also given to the time when the sun had gone down; so that the command was to kill it at the latter part of the afternoon.

The Babylonian hours, which were in use in our Saviour's time, were invented by the Chaldeans, who took the lead in astronomical discoveries and calculations. The day, between sunrise and sunset was divided into twelve equal parts: these, of course, were not of fixed length, but were longer or shorter, according to the length of the day. At the time of the equinox, when the sun rose and set at six, they would have been just equal to ours,—sixty minutes long; but if the sun should have risen at four and set at eight, the hours would have been as much longer in proportion as the day was longer,—they would have been eighty minutes long. In Palestine, however, the sun never rose earlier than five, nor later than seven. The third hour was the hour of morning prayer; if the sun rose at six, this would be at nine o'clock; but if it rose at five it would be at eight o'clock; and the time of evening prayer was also at the middle of the afternoon; the sixth hour, which was noon, never changed: but all other times varied with the length of the day. We read in the scripture of those who went up to the temple at the third hour to pray,—this being the time of public prayer; and our Saviour sat at the well of Sychar at the sixth hour, which was the meridian heat of the day. The one who came into the vineyard in the eleventh hour, came but just before sunset,—the time when every one was required by the law to pay those who had been employed in his service that day. This division of the day into hours had its inconveniences, which are too obvious to be mentioned. They were doubtless felt;—but what was to be done? It is clear, as was just now mentioned in the case of minutes, that without timepieces, which they had not, hours of fixed and equal length could not possibly be measured by man.

The Jews did not follow the Chaldeans in their time of beginning the day; and this brings us to the divisions of time into days. These, in most latitudes, are measured sufficiently well for common purposes, by the earth's revolution on its axis, which exposes all parts of its surface in succession to the light of the sun. In high northern latitudes, however, this would not answer; the hours of a day which last six months, might hang heavy on their hands; and a night of equal length would be somewhat too long to spend in sleep, if they had any idea of ever waking. Even now, though any one would suppose that this portion of time was exactly measured by the heavens, we have in use three different kinds of day. The natural day is the time between sunrise and sunset.—The civil day, that which is observed in all legal transactions, begins at midnight,—thus the Sabbath is regarded as beginning at twelve on Saturday night, and all legal movements are suspended till the next night at twelve. Then there is the astronomical day,—that which is used by astronomers and navigators,—it begins at noon, because that time can best be determined by observations,—and the hours are counted from one to twenty-four. The day, with the Jews, began at sunset; thus the Sabbath began at sunset on Friday evening. Friday was called the preparation for their Sabbath, because as nothing could be done on the Sabbath, all preparations were necessarily made on the day before. A calm, perfect and profound, prevailed in every habitation, from the moment when the sun went down; then, according to the beautiful ceremony of their religion, the Sabbath lamp was lighted in every dwelling, and burned till the next day's close.

In practical use, there is a slight perplexity attending the subject of time as measured by the sun. The days as measured by the sun are not equal throughout the year: this is because the earth has two motions,—while it turns on its axis, it moves also in its orbit round the sun. While it is turning once on its axis, it advances about one degree in its orbit: it must therefore turn so much more on its axis, before the sun can be at the meridian again. But the younger part of our readers will understand this better by an illustration; let a lamp represent the sun; now if any one turns round on the place where he stands, when he has turned exactly round, he shall be exactly facing it again. But suppose that when he is turning, he is at the same time moving to the right: in that case, when he has turned quite round, he will not be facing it; he must turn more before he will face it;—now the time of meridian is the time when the place on the earth where we are, is exactly facing the sun,—and owing to this motion in its orbit, the earth must sometimes turn more than quite round, and at others less than quite round, to bring us facing to the sun. But it always turns quite round in exactly twenty-four hours;—if it must turn more than quite round, it will take more than twenty-four hours,—if not quite round, it will take less than twenty-four hours;—and, accordingly, we find that the days, as measured by the meridian, are sometimes about a quarter of an hour longer, sometimes as much less than twenty-four hours.

Now if we measure time by the meridian,—if we take it to be twelve when it is noon according to the sun, it is evident that we must alter our clocks every day. This will not do;—and the course which men have adopted, is the old-fashioned way of splitting the difference between the longer and shorter days, and going by a clock which measures equal days throughout the year. The clock gives the average length of the hours,—mean time, as it is generally called. Four times in the year it will be twelve by the clock and by the meridian, at the same instant: but on every other day, the clock will differ from the sun.

Of the week there is not much to be said. It was doubtless suggested by the time which it takes the moon to pass through one of her quarterly changes, though not exactly. In the Scripture, the word applies not merely to days but to years, —thus Laban says to Jacob, "fulfil her week,"—meaning the seven years' term of service by which Jacob was to earn the hand of his daughter. So Daniel, in the celebrated prophecy of the seventy weeks, meant weeks of years, and was easily understood by the Jews.

This division of time has been in use from very early ages; and it is a little singular that the days of the week have been named from the heavenly bodies by the ancient Chinese, Hindoos and Egyptians, as they were named by the moderns,—as we name them now. Sunday, as is well known, is named from the sun, as Saturday is from Saturn,—it being Saturn's day. Monday is so called from the moon; the others retain the names to this day, which were given them by our Saxon fathers. Tuesday is so called from the Saxon name of the planet Mars; Wednesday, from the Saxon name of Mercury; Thursday, from the Saxon Jupiter, and Friday from the Saxon Venus. This shows how generally the heavenly bodies are regarded as presiding over the measures of time.

There is one singular form of expression in scripture which requires more attention than it has received;—we will show what we mean by an example. It is said the disciples met after eight days, meaning a week after our Saviour's resurrection; we should say after seven days; but if the time mentioned took in the least portion of a day, they considered it as taking in the whole. Thus our Saviour is said to have been in the grave three days and three nights: according to our calculation, it was not so;—for he died late on Friday afternoon, and rose early on Sunday morning: but according to the Jewish calculation, the statement was exact; for though he was not forty-eight hours in the grave, he was still in it a part of three days, —that is, Friday, Saturday and Sunday. The law required that infants should be circumcised when they were eight days old,—and still it was done on the eighth day, when, according to our calculation they were but seven days old. By them, the day of the birth, however little of it remained, was called the first day, and the day of circumcision, however little of it was spent, was reckoned the eighth day. This must be understood in the explanation of Herod's massacre. It is said that he slew them from two years old and under,—and it is often asked, why he should have made such a needless slaughter, to include a child but lately born, and why do not historians mention such a wide work of blood. But look at the peculiar calculation of the Jews. Suppose that our Saviour was born on the twenty-fifth of December, he would have been called one year old when that year closed, and on the first of January he would have been called two years old, because he had already seen a part of two years. This is a fact, however strangely it sounds. So that those born a very little time before Herod's murder, supposing a new year to have begun since they were born, would have been described as two years old; and those born on or after the new year's day, would have been included in the phrase "and under,"—"under," according to the time which he inquired of the wise men. Vile as he was, he did not probably wish to murder more than were necessary to secure the death of the lineal heir to the Jewish throne.

The greatest importance of this division of time into weeks, arises from its furnishing us with the Christian Sabbath; the Jewish Sabbath was on the seventh day of the week,—as the earliest Christians were Jews, they of course observed the day set apart by the Hebrew faith, and also another day, the first of the week, in remembrance of the resurrection of their Master. Jesus Christ taught his disciples, to respect the institutions of their former religion;—they did not therefore take the seventh day for their celebration, possibly, because it was already sanctified to a different sacred purpose; but there was no such objection to the first, which was also recommended to them by its being the day when the Saviour left the dead. How important this celebration is to religion, has been sometimes acknowledged by its enemies. The French revolutionists, when they wished to abolish Christianity, saw that it could not be done while the Sabbath was regarded. They therefore undertook to alter the calendar, dividing the year into twelve months of thirty days each, and every month into three decades, or weeks of ten days each. This was made the civil reckoning by law, so that the Sabbath was no longer observed. But twelve years could not make the people forget the Sabbath, nor was the new computation of time acceptable,—and when Napoleon came to the head of affairs, he abolished the new practice, and commanded that the week should be reckoned as in other civilized lands. And the reason why they could not make men forget the Sabbath, was, that the Sabbath was made for man; the nature of man requires a day of rest, and God has ordained what proportion of time is needed for the purpose. One seventh portion of time is the amount set apart for the purpose, and the experience of man has abundantly shown that the estimate is just. There is no doubt on the mind of any one, who is capable of judging, that men are better in every respect with it, than they could be without it, both as respects this world and the other. As respects this world, there is more work done, and far better done,—there is more prudence, thrift and prosperity of every kind than there could be, if the Sabbath were like any other day; and as for morality and religious feeling, without the Sabbath, they would soon be lost. One thing is evident;—it is that none need the Sabbath, so much as those who violate it, and those who would make it like any other day.

The division of the year into months, is suggested by the changes of the moon. For the moon to pass through her regular circle of changes, [illegible] full and waning, requires about twenty-nine days and a half. These changes of the moon are so obvious and striking, that it was very natural to employ the circle of changes or lunation, as it is called, for one of the larger measures of time. Still, it has always occasioned much perplexity, arising from the fact, that a month measured by the moon, is not so long by a day, as a month measured by the sun. A month according to the sun, is the time which it takes the sun to pass through one of the signs of the zodiac, which is thirty days and a half *nearly*,—or to be accurate, is exactly one twelfth part of three hundred and sixty-five days five hours and forty-nine minutes, which is the length of the mean solar year. Twelve months therefore, according to the moon, do not equal twelve months according to the sun, and of course do not make out an *entire* year.

The earliest months mentioned in the scriptures consisted of thirty days, all except the twelfth, which was made to consist of thirty-five days, in order to fill out the entire year. We say the twelfth, because the months were then numbered, and not known by names as they are now. But all this was afterwards altered. They gave names to the months, and measured them by the moon, while the year was necessarily measured by the earth's revolution round the sun. These lunar months consisted of twenty-nine days and a half,—or rather in order to avoid the inconvenience of fractions, one month consisted of twenty-nine days, the next of thirty, and so on throughout the year. The new moon was the beginning of the month; the new moon determined the time of their celebrations, so that exactness in the time was of importance in a civil and religious point of view. They did not, however, probably from want of astronomical knowledge, go by the time when the moon is in conjunction with the sun; but by the time when it is first visible in the sky. The first appearance of the crescent was narrowly observed; if the sky was cloudy, the time was determined by authority in the temple; at night, beacon fires were kindled on the mount of Olives: this fire was immediately answered from the surrounding heights, where men were stationed on the watch; the signals rapidly spread, and in a few moments, all the hills in Judea were in a blaze. In Jerusalem, all the trumpets of the temple summoned the people to rejoice, and to celebrate the festival of the new moon. How much was thought of the season of the new moon, no reader of scripture will need to be informed.

But, as we have said, twelve of these lunar months do not make out the year. And here let us call your attention to the arrangement made by Moses, who was fully aware of the difficulty which would arise from thus measuring time by the moon. The difficulty may be explained in this way. Twelve lunar months make about three hundred and fifty-four days, while the year consists of three hundred and sixty-five;—the lunar year therefore is eleven days less than the true year. Now, suppose that the passover should come one year on the twenty-first of March; according to the moon, the anniversary would come the next year on the tenth of March; the year after it would go back into February,—in a few years the passover would come in January,—and thus we see, that, going by the moon, the festivals would go further and farther back, till they travelled throughout the year. The difficulty was also felt in matters of common life. Suppose that a man had hired and paid for a field for three years; according to this rule he would lose his third crop, the harvest being in the spring; since the end of the third year would be thirty-three days earlier than the first, it would come in February, when the grain was not ripe, and as that third harvest was not ripe till the beginning of the fourth year, he must lose it, he having hired the field for but three.

Now, with their small amount of astronomical knowledge, the only remedy they could devise for this difficulty, was to add a thirteenth month to the third year, and Moses so arranged it, that this must be done. Some may say, why did he not tell them at once to go by the sun, which would have saved all this trouble? This, however, would be like the suggestion of a certain princess, who was told that the poor were dying for want of bread: Astonishing! said she, why don't they eat pastry? The reason was, that they could not get it,—and the reason why Moses did not go by the sun, was, that nobody knew the exact length of the solar year. His only remedy was to add this thirteenth month when it became necessary, and the way in which he did it, shows his far-sighted wisdom. Instead of leaving it to the discretion of the priests to add it when it became necessary, he provided that it should of necessity be done. The first moon of the year, answering nearly to our April, was the harvest moon of Palestine. Moses called it the ear-moon, and required that on the sixteenth day of it, at the time of full moon, ripe ears of barley should be offered as first fruits to God. By reason of the lunar year being only three hundred and fifty-four days, this full moon would come eleven days earlier next year, and twenty-two days earlier the year after; and then, evidently, the harvest would not be ripe, so that the offering could not be made. When this was the case, they were not to call that moon the first of a new year: it was to be considered as the thirteenth month of the old year; they were to wait for the next moon, when the harvest would be ripe, and that was to be regarded as the ear-moon and first of a new year. The great advantage of this arrangement was, that there was no need of going to astronomers to know when this odd month must be added; every husbandman could tell whether the harvest would be ripe or not, by the middle of the moon; and if not, he needed no public authority to tell him that that moon was the thirteenth of the old year, and not the first of the new. Where there is no such arrangement, there is perpetual confusion. In Turkey, at the present day, where they go by the moon without adding such a month, the festivals travel back every anniversary till they go quite through the year.

Some ancient nations, being aware of this difficulty, made attempts to measure the year by the sun: but they fell on this very stumbling block,—ignorance of the exact length of the solar year. They called it three hundred and sixty-five days; which was not correct, for the true year is about six hours longer, which in four years would amount to a day. The Egyptians are an example. They went by the heliacal rising of the dog-star,—that is, the time when, after having been so near the sun as to be lost in its light, it first rises so much earlier than the sun that its light can be seen in the sky. They supposed that the dog-star, after having been thus lost in the light of the sun, would re-appear at precisely the same time every year.

But they found that the heliacal risings of this brilliant star, were advancing at the rate of a day in four years; which, in the course of a century, would make a serious derangement of dates and calculations. We do not know when the year was first known to be six hours more than three hundred and sixty-five days in length. Plato is said to have learned it from the Egyptians,—but if they knew it, they do not seem to have known how to apply their knowledge, so as to remedy the trouble which arose from the unequal length of the years. This shows the wisdom of Moses in supplying a practical remedy for a defect, which there was not science enough in the world to repair.

We think that even a child may be made to comprehend what this difficulty is. It made precisely the same difficulty in the year, which a clock going too fast would make in a day. But what would the person who had the management of such a clock, do with it? Probably, if he found it was an hour too fast, he would have the wit to put it back, and make it go through another hour before he would consider the given hour as come. This is just what Moses did: when he found that the passover was coming a month too soon, he put the calendar back, and made it go through another month, before he called it the beginning of the new year.

Attempts were made by some ancient nations, to divide the difference between the lunar and solar years: some of these attempts may be traced among the Egyptians. Thus, the lunar year being three hundred and fifty-four days, and the solar three hundred and sixty-five, they considered the year as consisting of three hundred and sixty days,—to make no mention of fractions. This luni-solar year was more than five days longer than the lunar year, and as much shorter than the year as measured by the sun. But this was too fast;—and if the new year came five days and a half earlier every year than in the last, the months must soon cease to correspond to the seasons, and in less than half a century, the winter months must change places with those of summer. Professor Playfair remarked, that this fact would explain a difficult passage in Herodotus; the historian said that, in the time of the ancient Egyptian kings, the sun had twice risen in the place where it had formerly set, and twice set where it had formerly risen. By this he supposes it was meant, that the sun had gone twice through all the signs of the ecliptic; and that the sun had risen and set twice in every day and month of the year. This was eagerly seized by those who are for discrediting the sacred history, to prove that the earth is much older than the account of Moses makes it: but all this might have happened in the short space of one hundred and thirty-eight years; since, in that period, there would be a difference of about two years between the lunar and solar year.

Without saying more of the perplexities of the ancients, we will now proceed to give some account of the first effectual attempt made to correct the calendar. It was done under the orders of Julius Cæsar,—by far the most accomplished and intellectual of the class of conquerors to which he belongs. His victories do no lasting honour to his name: but this enterprise secures him the everlasting gratitude of mankind. We do not mean to say that he did this by his own calculations: he called to his aid the best astronomers that the age afforded. Sosigenes is celebrated as the most eminent of this number; he saw in the outset, that nothing could be effected, without ascertaining, as nearly as possible, the length of the solar year. Accordingly, having ascertained, as he thought, that the earth revolved round the sun in three hundred and sixty-five days and six hours, he settled it as a principle, that the months must be so arranged as to fill up three hundred and sixty-five days and six hours, that being the length of the year, without regard to the moon.

The first thing to be done was, to bring back the equinox to its proper place in March; in order to do this, he *put the clock forward;* he made the year then passing go through two more months than usual,—because the festivals then came two months too soon. The year of fourteen months was called the year of confusion. But beside restoring the equinox to its place, it was necessary to provide for the extra six hours, and as these hours amounted to a day in every four years, he inserted a day in every fourth year, making three hundred and sixty-six, the same which we now call a leap year. This was done when Cæsar was appointed dictator and sovereign pontiff, about forty-five years before the coming of our Lord. This is substantially the same with the calendar now in use. It made the average length of the years three hundred and sixty-five days and a quarter, instead of three hundred and sixty-five days as they were before. The extra day was added in February, as it is now. He called it the bissextile; we call it the leap year.

But with all the pains bestowed at that time upon the calendar, it was not quite correct. Before the time of Cæsar, the year had been too short; he lengthened it by adding six hours; but this was leaning on the other side, and making it a little too long; for the true year wants eleven minutes and ten seconds of three hundred and sixty-five days and six hours. This, to be sure, is not much, and the error would occasion no inconvenience for many years. It amounted only to a day in one hundred and thirty years, and the calendar of Cæsar was in use more than fifteen hundred years before it was even detected. At length, in the time of Gregory XIII. a pope of the sixteenth century, it was ascertained by the [illegible] of the church, that there was some error in the computation of time. On looking into the subject, it was found that, whereas the calendar placed the vernal equinox on the 21st of March, it actually took place on the 10th, so that the [illegible] and festivals had gone ten days from the place which the calendar assigned them. The difficulty experienced by the church was this. Easter was to be celebrated on the first full moon after the spring equinox; the calendar placed the equinox on the 21st of March: it really took place on the 10th; now suppose the moon was full on the 20th, what day should they observe? The 20th was before the equinox by the calendar, and yet after it in reality; if they went by the calendar they must wait for the next full moon, and yet this day, the 20th, being after the equinox, was the real anniversary of the Passover and of Easter. This was a serious thing to a church which attached so much importance to its anniversaries and celebrations.

But something must be done. And, whereas on former occasions, they had been obliged to add some days to make out the year, or, as we should say, *to put the clock forward*, now they were obliged to put it back; that is, they were obliged to strike out some days to bring back the equinox to the 2 of March, where it belonged. The Pope, accordingly, gave orders that ten days should be struck out in October, 1582; that the next day after the 4th, should be not the 5th, but the 15th,—a change which was immediately made in all Roman Catholic countries, though not without sore misgivings on the part of some of them, at seeing the head of the church cutting off so many days from the term of their natural lives. In Protestant countries, the new style, as it was called, was not readily adopted; it seemed like a simple and necessary reform: still, they thought that since it proceeded from the Catholics, it was a suspicious movement, and the less they had to do with it the better; they accordingly stood out against it in rejoicing ignorance, and with so much perseverance, that it was not till the middle of the last century, that Protestant countries generally adopted the Gregorian calendar.

In England, the new style was not adopted till 1752. As it was introduced by a pope for the express purpose of regulating the ecclesiastical year, and ascertaining the time for keeping the festivals celebrated in the Roman church, it was looked on with great suspicion by protestants. In Russia, and other countries where the Greek church prevails, the new style was not adopted till 1830. Dr Johnson gives an account of the sensation produced by the act of parliament for effecting the change. The young people were all delighted at the thought of killing so much time as eleven days, for it was necessary to strike out one day more than in 1582; they also thought that it would be a beautiful thing to have a year, which public authority ordained should be a year of confusion. But older people did not like the idea of having a year with such an ominous name: moreover, they did not see what right parliament had to strike out eleven days, as if Providence could not regulate that matter without their helping hand. The greatest outcry was made by certain ancient women, who said that their lives were full short enough without having eleven days struck off, and that to strike out a Sabbath from the year, seemed to them the most unrighteous thing that ever was done in a Christian country. The alteration was proposed in parliament by the earl of Chesterfield; but the earl of Macclesfield, then president of the Royal Society, a nobleman of much talent and science, was the real author of the measure, and bore a great part in the details of its execution.

The Pope, or rather the men of science whom, like Cæsar, he relied on in the whole movement, not only restored the seasons to their place, but provided against a recurrence of the difficulty. The method was ingenious and effectual. The excess was a day in one hundred and thirty years. He therefore ordained that in three centuries out of four, the last year should be a common year, and not a leap year. Thus, 1600 was a leap year, having three hundred and sixty-six days; but 1700, 1800, and 1900 are common years, having but three hundred and sixty-five. This arrangement disposes of one day in about one hundred and thirty years, and brings the calendar nearly to perfection. We say nearly, for though there is a slight variation, it will only amount to a day in three thousand years, and that need not give us much concern: it can be attended to as well in the year 4835. According to the Gregorian or new style, the year begins on the 1st of January. This was the time fixed by Cæsar for new year's day, because it is the time when the earth is nearest to the sun. But it was not generally regarded. Some have commenced the year on the 25th of December, the supposed anniversary of our Saviour's birth; others have commenced it on the 25th of March, and this was the time established by law in the reign of Henry VIII. and generally observed afterwards as new year's day, till the change of style in 1752. In the dates of events in history, there is some perplexity, unless we remember this fact. When the old style was in use, January was one of the last months of the old year, instead of being, as it is now, the first month of the new.

But we must not dismiss the subject, till we have said something of the still larger divisions of time, called epochs or eras, of which the Christian era, which computes the years from the birth of our Lord, is one. This is the only one with which we have much concern; but in speaking of this, we are obliged to say a few words of the cycles, or circles of years, which were in use before the years were reckoned from our Saviour's birth.

The first was the solar cycle, and it was formed in this way. Suppose the sun entered the sign Aquarius in January, on Wednesday the 21st, at one o'clock in the day. It will not again enter the same sign on the same day of the month, the same day of the week, and at the same hour of the day, in less than twenty-eight years; twenty-eight years, therefore, was called the cycle or circle, through which the sun must pass before he comes back to the place whence he started. In using this they said that such a year was the first, second, third, of the solar cycle; and so on to the twenty-eighth, when they began again. There was also a lunar cycle, which was thus formed. Suppose that the moon should be at the full on Wednesday, the 28th of January, at one o'clock in the day. It would not be full again on the same day of the month, the same day of the week, and at the same hour of the day, under nineteen years: this, therefore, was called the lunar cycle, which brings back the moon to the place whence she started. This was called the golden number, because it was found so valuable in ancient times, for regulating festivals which depended on the moon. There was another smaller cycle, called the Roman Indiction,—a period of fifteen years, which was in use only to determine the time for paying certain periodical taxes.

But these cycles were so short as to be inconvenient; in order to get a larger period, which might save the trouble of counting the years over and over again, these cycles were multiplied together, and the product was a cycle of 7980 years, which was called the Julian period. This is assumed to have had its commencement before the creation of the world, since there has been no time since, when the three cycles could have begun together.

There was no attempt made to reckon the years from the time of our Saviour's birth, till the year 527, when Dionysius Exiguus, a Roman abbot, suggested that this reverence ought to be paid to the Saviour of the world. He therefore began so to date the years, and assumed that the first year of the Christian era was the 4714th of the Julian period. There is no historical record by which the nativity can be precisely ascertained; he therefore decided what year it was by such indications as he could gather from comparing the sacred history with that of profane historians. But those were times in which much less was known concerning these points than in the present age; and a mistake was then made in fixing the time of our Saviour's birth which has never since been corrected.

The manner in which this mistake was brought to light is a fine illustration of the advantages of science. Who would suppose that astronomy could have pointed out an error in chronology? and yet so it was. Dionysius fixed the 1st year of Christ in the 4714th of the Julian period. But Josephus mentions that during Herod's last illness there was a remarkable eclipse of the moon. On consulting astronomical tables, we are enabled to ascertain the date of that eclipse to the day and hour; we find that it took place in the 4710th year of the Julian period, on the 13th of March, three hours past midnight at Jerusalem. Now we know that our Saviour was born before Herod died; so that he must have been born at least four years earlier than that which was fixed upon as the first of the Christian era. He must have been born sometime before the death of Herod, since his parents took him into Egypt to save him from that tyrant's malice, and kept him there till Herod died. So that astronomy makes it perfectly clear that our Saviour was born at least four, possibly five years earlier than the time assigned by the nativity; and if the Christian era had been correctly determined, the year 1840 would be 1844, or possibly 1845. The reason why the mistake, though universally admitted, never has been corrected, is, that we cannot fix the precise year, in the first place, and in the second, the error has prevailed for 1200 years through the dates of all histories, so that much confusion would be made in chronology without any correspondent gain.

CALIFORNIA, (*a*.) The Indians of California may, without injustice, be classed lower in the scale of mankind even than the Esquimaux. Equally inanimate and filthy in habit, they do not possess that ingenuity and perseverance which their northern neighbours can boast; sullen and lazy, they only rouse themselves when pressed by want; and in the settlements of the missioniares, called missions, where the cravings of hunger and thirst are satisfied, coercion alone goads them on to labour.

The men are large but not muscular, nor of a manly appearance; their complexion is very dark, and their features partake of the negro cast; the hair is long, but not coarse. The women are also large, their limbs and features regular, but not handsome: they perform all the household work, and are quite slaves to the other sex. Both sexes tattoo, but without any regular design in the marks on the skin; they perforate the lobes of the ears, and wear in them pieces of wood four to six inches in length, ornamented with feathers; their head-dresses and waist-belts are also adorned with decorated wood and pieces of bone, teeth of animals, and mother-of-pearl. They use no pottery, or earthenware, but work baskets so close as to contain fluids. Bows and arrows are their only weapons;—they are of fir, and slightly made; but, to give toughness to the bow, which is about three feet in length, the back part of it is strengthened with a glutinous composition of deer-sinews. The arrows are about the same length, very slender, and armed at the points with small pieces of flint jagged at the edges.

The use of the *temiscal*, or vapour-bath, of which they are passionately fond, is peculiar to this part of America. It consists of a structure of mud, the floor of which is sunk from four to five feet below the surface of the earth, of a circular form, about fifteen or eighteen feet in diameter. Besides the entrance, which is provided with a short passage to check the too ready admission of the external air, there is a small orifice in the top to allow of the escape of the smoke from a fire kindled in the centre of the temiscal. Around this fire, and with their feet towards it, the Indians lie wrapped in their thick woollen blankets, and continue so till the whole frame is reduced to a nervous debility by excessive perspiration: in this state they quit their warm retreat, and plunge themselves into a stream of cold water, near which they are careful always to place their temiscal.

The Indians pay their adorations to an evil spirit, who is supposed to preside over every thing, and whose displeasure they wish to avert by worship. This spirit is believed to be supreme, and unassisted in his office by any inferior agents. They have a full conviction of a future existence, and expect to enjoy happiness after this life in some delightful island in the sky, which happiness, being measured by their present ideas, consists in sensual gratification. Immediately after the breath has left the body, the corpse is burned without removing it from the spot, and, as their huts are not of laborious structure, they share in the conflagration.

The number of petty tribes is almost countless: and, what is singular, almost every tribe speaks a language, or perhaps dialect, which is not understood by the rest. Some dialects have the harsh sound of the Esquimaux, the words generally terminating in *ak*, *ik*, *uk*; while others are soft and full of vowels. Their huts are formed of stakes driven into the ground, generally circular, and thatched with straw; facility of construction being desirable, on account of the tribes frequently changing their stations. From the vermin which abound in these rude dwellings, it becomes necessary to fire them occasionally. Although the country is overrun with horses, the Indians make no use of them.

CALNE; an ancient borough town in the county of Wilts, England. It consists principally of one long street, partially lighted but not paved. The houses are in general of stone, and well built. It is amply supplied with water, having, besides a number of springs, the Marlan, which a little further on falls into the Avon, running through it. A branch of the Wilts and Berks canal passes through the town, which, uniting with the Kennet and Avon canal, and the latter with the Thames at Abingdon, affords an easy communication with London, Bristol, and the intermediate places: with all these advantages its manufactures, which were chiefly woollen and very extensive, have of late been considerably limited. The articles made are principally broad cloths, kerseymeres, and serges. The market-day is Tuesday.

Calne is famous as the place where the controversy was terminated between St Dunstan, then archbishop of Canterbury, on the part of the Benedictine monks, and the secular friars. Calne has been much benefited by the marquess of Lansdowne, whose mansion is in the neighbourhood. Three miles to the east of the town is a remarkable figure of a horse cut in a chalk hill, 157 feet in length. The vicinity abounds in curious and beautiful fossils. Population in 1831, 4795.

CAMBRIDGE (*a*.) The university of Cambridge consists of seventeen colleges, each of which is a body corporate, and bound by its own statutes; but they are all subject to the paramount laws of the university. Each college furnishes members both for the executive and legislative branches of the government. The legislative branch of the government consists of the two divisions of the senate, and a council called the Caput. The senate consists of all who are masters of arts, or doctors in either of the three faculties, divinity, civil law, or physic, having their names on the college boards, holding any office in the university, or being resident in the town of Cambridge. They generally number about two thousand. They are divided into two classes, called the regents and the non-regents. The regents, or members of the upper house, or white-hood house, as it is called from the members wearing hoods lined with white silk, are masters of arts of less than five years' standing, and doctors of less than two. The non-regent or lower house, called also the black-hood house, from the members wearing black silk hoods, includes all the rest. But doctors of more than two years' standing, and the public orator of the university, may vote in either house.

The council, called the caput, consists of the vice-chancellor, a doctor in each of the faculties, divinity, civil law, and physic, and two masters of arts to represent the regent and non-regent houses. The vice-chancellor is a member of the caput, by virtue of his office. The other members of this council are chosen as follows. The vice-chancellor and the two proctors nominate severally five persons; and out of these fifteen, the heads of colleges, doctors, and scrutators elect five, commonly honouring the vice-chancellor's list with the appointment. Every proposition of a university law, or grace, must be approved by the caput, every member having a negative voice, before it can be presented to the consideration of the two houses of the senate.

Meetings for the transaction of university business, called congregations, are held about once a fortnight, and a list of the days of such meetings is published by the vice-chancellor at the beginning of each term. The vice-chancellor may call the senate together for the despatch of extraordinary affairs, at other times, by causing a printed notice, specifying the business, to be hung up in the halls of the several colleges, three days before the time of assembly. Any number of the senate, not less than twenty-five, including the proper officers, constitute a quorum, and may proceed to business. Besides these meetings, there are others called statutable congregations, or days of assembly enjoined by the statutes, for the ordinary routine of university affairs, such as conferring degrees, electing officers, &c., for which no special notice is required. A congregation may also be held without three days' notice, provided forty members of the senate be present. Every member has a right to bring any proposition or grace before the senate, if it has been previously approved by the caput. When it has passed the caput, it is read in the non-regent house by one of the scrutators, and in the regent house by the senior proctor. It is read in like manner at the second congregation. If a *non placet* is put in by a member of the non-regent house, the vote is then taken. If the number of *non placets* equals or exceeds the number of *placets*, the grace is thrown out. If the *placets* are more than the *non placets*, it is carried up to the regent house, and there undergoes the same process. If it passes through both houses, it is considered a regular act of the senate, and if the subject be of a public nature, it becomes a statute. No degree is conferred without a grace, which passes through the process above described. A grace of this kind is called a *supplicat*. Those for bachelor of arts, honorary degrees, and masters of arts of king's college, require to be read at one congregation only.

The executive of the university consists of the following officers:

The chancellor. This officer is the head of the university, and has sole authority within the precincts, except in cases of mayhem and felony. He seals the diplomas and letters of degrees, &c., given by the university, defends its rights and privileges, convokes assemblies, and administers justice to the members under his jurisdiction.

The high steward, who has the power of trying scholars impeached of felony within the limits of the university, and to hold and keep a leet according to the established charter and custom. He appoints a deputy by letters patent, which are confirmed by a grace of the senate.

The vice-chancellor. This officer is elected annually by the senate, on the 4th of November, and, as his title indicates, has the power of the chancellor, in the government of the university, and the execution of the statutes, when the chancellor is absent. He is required, by an order made in 1587, to be the head of some college; and he acts as a magistrate for the university and county.

The commissary is an officer under the chancellor, and holds a court of record for all privileged persons and scholars under the degree of M.A. for the trial of causes by the civil and statute law, and by the custom of the university.

The public orator writes, reads, and records the letters to and from the body of the senate, and presents to all honorary degrees, with an appropriate speech.

The assessor is an officer specially appointed by grace of the senate, to assist the vice-chancellor *in causis forensibus et domesticis*.

The two proctors are peace officers, annually elected. They must be masters of arts, of at least two years' standing, and are regents by virtue of their office. Their duty is to watch over the discipline of all persons *in statu pupillari*, to search houses of ill fame, and take into custody loose and abandoned or supected women. They are also required to be present at all congregations of the senate, to stand in scrutiny with the chancellor or vice-chancellor, to take the suffrages of the house, both by word and writing, to read them and declare the assent or dissent accordingly, to read the graces in the regent house, to take secretly the assent or dissent, and openly to pronounce the same.

The librarian's duties are designated by his title. The registrary is required, either by himself or deputy, to attend all congregations, to direct the form of the graces to be propounded, and to enter them on the university records, when they have passed both houses. He also registers the seniority of such as proceed annually in any of the arts and faculties, according to the schedules furnished him by the proctors. The two taxors are masters of arts, and regents by virtue of their office. They regulate the markets, and examine the assize of bread, the lawfulness of weights and measures, and call the abuses thereof into the commissary's court. The scrutators are non-regents. Their duty is to attend all congregations, to read the graces in the lower house, to take the votes secretly or openly, and to declare the assent or dissent of that house. The moderators are nominated by the proctors, and appointed by a grace of the senate. They superintend the exercises and disputations in philosophy, and the examinations for the degree of bachelor of arts, in the place of the proctors. The three esquire bedells are required to precede the vice-chancellor with silver maces, upon all public occasions and solemnities. They bring the doctors present in the regent house to open scrutiny, there to deliver their suffrages by word or writing; they receive the graces from the vice-chancellor and caput, and deliver them first to the scrutators in the lower houses, and, if they are granted, carry them to the proctors in the upper house. They attend the professors and respondents in the three faculties, from their colleges to the schools, and during the continuance of the several acts. They collect fines from the members of the university, and summon the members of the senate to the chancellor's court. The university printer, the library-keeper, the under library-keeper, and the school-keeper, are elected by the body at large; the yeoman bedell is appointed by letters patent under the hand and seal of chancellor; and the university marshal, in the same manner, by the vice-chancellor.

The university has two courts of law, the consistory court of the chancellor, and the consistory court of the commissary. The former is held by the chancellor, or in his absence, by the vice-chancellor, assisted by some of the heads of colleges, and one or more doctors of the civil law. All pleas and actions personal, as of debts, accounts, contracts, &c., or of any injury begun or grown within the limits of the university, and not concerning mayhem and felony, are heard and decided in this court, and the manner of the proceeding is according to the civil law. An appeal lies from this court to the senate. The latter is held by the commissary, acting by authority deputed to him under the seal of the chancellor. He takes knowledge and proceeds in all causes, as above, except that causes and suits to which the proctors or taxors, or any of them, or a master of arts, or any other of superior degree is a party, are reserved to the jurisdiction of the chancellor or vice-chancellor. The manner of proceeding is the same in this as in the other court; and the party aggrieved is allowed, by statute, an appeal to the chancellor's court, and from thence to the delegates, if the cause and grief of the party render such application necessary.

The two members sent by the university to parliament are chosen by the senate. The university counsel are appointed by grace of the senate, and the solicitor is appointed by the vice-chancellor. The syndics are members of the senate, chosen to transact all special affairs of the university. The professors have stipends allowed from various sources, from the university chest, from government, or from estates left for that purpose. The annual income of the university chest is about £16,000, and the annual expenditure about £12,000. The funds are under the management of the vice-chancellor, and the accounts are examined by three auditors, appointed annually by the senate. The terms of the university are three. The October or Michaelmas term begins on the 10th of October, and ends on the 16th of December; Lent, or January term, begins on the 13th of January, and ends on the Friday before Palm Sunday; Easter or midsummer term begins on the 11th day after Easter day, and ends on the Friday after commencement, which is always the first Tuesday in July.

The seventeen colleges of the university were founded by different individuals, all of whom enjoined, first, the cultivation of religion, and then of polite literature and the sciences. The statutes of some of the colleges require the fellows to be born in England, in particular counties, &c. The fellowships at Trinity, St John's, Sidney, Downing, Clare Hall, and Trinity Hall, are open to all competitors, and there is the following law with regard to all; "Whosoever hath one English parent, although he be born in another county, shall be esteemed as if born in that county to which his English parent belonged. But if both parents were English, he shall be reckoned of that county to which his father belonged." Stat. Acad. p. 268.

The orders in the different colleges are, 1. A head of a college or house, who is generally a doctor in divinity; excepting of Trinity hall, Caius college, and Downing college, where they may be doctors in civil law or physic. The head of King's college is styled Provost; of Queen's, President; all the rest, Master. 2. Fellows, generally doctors in divinity, civil law, or physic; bachelors in divinity; masters or bachelors of arts; a few bachelors in civil law or physic, as at Trinity hall and Caius college. The number of fellowships in the university is 408. 3. Noblemen graduates, doctors in the several faculties, bachelors in divinity, who have been masters of arts, and masters of arts, not on the foundation, but whose names are kept on the boards for the purpose of being members of the senate. 4. Graduates, neither members of the senate, nor *in statu pupillari*, are bachelors in divinity, denominated four-and-twenty men, or ten-year men, so called because persons admitted at any college, when twenty-four years of age and upwards, are allowed to take the degree of bachelor in divinity after their names have remained on the boards ten years. During the last two years they must reside in the university the greater part of three several terms, and perform the exercises required by the statutes. 5. Bachelors in civil law and physic, who sometimes keep their names on the boards till they become doctors. 6. Bachelors of arts, who are *in statu pupillari*, and pay for tuition, whether resident or not, and keep their names on the boards, for the purpose of becoming candidates for fellowships, or members of the senate. 7. Fellow commoners, generally younger sons of the nobility or young men of fortune, who have the privilege of dining at the fellow's table. 8. Pensioners and scholars. The number of scholarships and exhibitions in the University is upwards of 700. 9. Sizars, men of inferior fortune, who usually have their commons free, and receive various emoluments.

CAMSIN; a hot wind of Africa, which generally blows in Egypt for two or three days successively, but less violently during the night than the day. It only occurs in the period between the middle of April and the beginning of June, and hence its Arabic name, which signifies "the wind of fifty days."

"On my route from Suez to Cairo," says Rüppel, "I had an opportunity of observing a meteorological phenomenon of a very curious nature, which possibly may lead to some interesting results. In the year 1822, May 21st, being seven [illegible] distant from Cairo, and in the desert, we were overtaken by one of those violent winds from the south, about which many travellers have told us such wonderful and incredible stories. During the night there had been a light breeze from the north-east; but a short time after sun-rise it began to blow fresh from the S.S.E., and the wind gradually increased till it blew a violent storm. Clouds of dust filled the whole atmosphere, so that it was impossible to distinguish any object clearly as far off as fifty paces; even a camel could not be recognised at this distance. In the meantime, we heard all along the surface of the ground a kind of rustling or crackling sound, which I supposed to proceed from the rolling sand that was dashed about with such fury by the wind. Those parts of our bodies which were turned towards the wind were heated to an unusual degree, and we experienced a strange sensation of smarting, which might be compared with the pricking of fine needles. This was also accompanied by a peculiar kind of sound. At first I thought this smarting was occasioned by the small particles of sand being driven by the storm against the parts of the body that were exposed. In order to judge of the size of the particles, I attempted to catch some of them in a cap; but how great was my surprise when I found I could not succeed in securing a single specimen of these supposed little particles. This led me to conceive that the smarting sensation did not proceed from the small stones or the sand striking the body, but that it must be the effect of some invisible force, which I could only compare with a current of electric fluid. After forming this conjecture, I began to pay closer attention to the phenomena which surrounded me. I observed that the hair of all our party bristled up a little, and that the sensation of pricking was felt most in the extremities and joints, just as if a man were electrified on an insulated stool. To convince myself that the painful sensation did not proceed from small particles of stone or sand, I held a piece of paper stretched up against the wind, so that even the finest portion of dust must have been detected, either by the eye or the ear; yet nothing of the kind took place. The surface of the paper remained perfectly unmoved and free from noise. I stretched my arms out, and immediately the pricking pain in the ends of my fingers increased. This led me to conjecture that the violent wind, called in Egypt Camsin, is either attended by strong electrical phenomena, or else the electricity is caused by the motion of the dry sand of the desert. Hence we may account for the heavy masses of dust, formed of particles of sand, which, for several days, darken the cloudless sky. Perhaps we may also go so far as to conjecture that the Camsin may have destroyed caravans by its electrical properties, since some travellers assure us that caravans have occasionally perished in the desert; though I must remark that in all the regions I have travelled through, I never could hear the least account of such an occurrence. At all events, to suppose that such calamities have been caused by the sand overwhelming the caravans, is the most ludicrous idea that can be imagined."

CANADA. (*a.*) Lower Canada is comprised within the parallels of 45° and 52° N. lat., and the meridians of 57° 50′ to 80° 6′. W. of Greenwich; embracing, so far as its boundaries will admit of estimation, an area of 205,863 square miles, *including* a superficies of 3,200 miles, covered by the numerous lakes and rivers of the province, and *excluding* the surface occupied by the St Lawrence river and part of the gulf, which cover 52,000 square miles; the entire province, land and water, being about a quarter of a million square miles, or 160,000,000 of acres.

Upper Canada is comprised within the parallels of 41° to 49° N., and the meridians of 74° to 117° W. of Greenwich, embracing an area of about 100,000 square miles, or 64,000,000 of acres.

The province of *Lower Canada* is divided into three chief districts—Quebec, Montreal, and Three Rivers; and two inferior districts—Gaspé and St Francis. These districts are subdivided as under:—

	Counties.	Signiories.	Fiefs.	Townships.
Quebec district	13	79	12	38
Montreal —	19	70	6	59
Three Rivers district	6	25	9	53
Gaspe —	2	1	6	10
	40	175	33	160

The inferior district of St Francis contains thirty-nine townships, which are included above with the townships of Montreal and Three Rivers. In this extent of country there are not less than sixty considerable rivers, besides many of smaller size, and upwards of seventy lakes, large and small.

Upper Canada has only been begun to be settled within comparatively recent years. It is nearly three times the size of England. Its superficies presents a much more level surface than that of Lower Canada—the features of the latter province, especially on the north, are those of the "mountain and the flood," on the most magnificent scale. The boundary-line between the United States and Upper Canada runs through the centre of the lakes, so that the navigation of those inland seas is divided between both.

The earliest European census of Lower Canada took place in 1622, when Quebec, then a small village, did not contain more than fifty persons. A general capitation took place in 1676, at which time there were 8415 inhabitants. The rapid increase of late years, is chiefly owing to emigration from Europe.

From 1760 to 1836 the population has doubled itself 3¼ times in Lower Canada. Taking the corrected census returns in 1825, and those of 1831, and the generally supposed population in December, 1836, the population of Lower Canada would appear to double itself in twenty-nine years only.

Quebec district contains thirteen counties, viz. Beauce, population, 11,900; area in square miles, 1007. Bellechasse, p. 13,529; sq. m. 1775. Dorchester, p. 11,946; sq. m. 348. Islet, p. 15,518; sq. m. 3044. Kamouraska, p. 14,557; sq. m. 4320. Lotbiniere, p. 9151; sq. m. 735. Magantic, p. 2283; sq. m. 1465. Montmorenci, p. 3743; sq. m. 7396. Orleans, p. 4349; sq. m. 69. Portneuf, p. 12,350; sq. m. 8640. Quebec, p. 36,173; sq. m. 14,240; Rimouski, p. 10,061; sq. m. 8840. Saguenay, p. 8385; sq. m. 75,090. Total pop. 151,985; sq. m. 127,949.

Montreal district contains nineteen counties, as follows:—Acadie, p. 11,419; sq. m. 250. Beauharnois, p. 16,857; sq. m. 717. Berthier, p. 20,225; sq. m. 8410. Chambly, p. 15,483; sq. m. 211. La Chenaye, p. 9461; sq. m. 299. La Prairie, p. 18,497; sq. m. 238. L'Assomption, p. 12,767; sq. m. 5008. Missisqui, p. 8801; sq. m. 360. Montreal, p. 43,773; sq. m. 197. Ottawa,

p. 4786; sq. m. 31,669. Richelieu, p. 16,149; sq. m. 373. Rouville, p. 18,115; sq. m. 429. St Hyacinthe, p. 15,366; sq. m. 477. Shefford, p. 5687; sq. m. 749. Terrebonne, p. 16,625; sq. m. 3169. Two Mountains, p. 20,905; sq. m. 1086. Vaudreuil, p. 13,111; sq. m. 330. Vercheres, p. 12,319; sq. m. 198. Stanstead, p. 10,306; sq. m. 632. Total pop. 290,050; sq. m. 54,082.

Three Rivers district contains six counties:—Champlain, p. 6991; sq. m. 783. Drummond, p. 3566; sq. m. 1674. Nicolet, p. 12,504; sq. m. 487. St Maurice, p. 16,909: sq. m. 9810. Sherbrooke, p. 7104; sq. m. 2786. Yamaska, p. 9496; sq. m. 283. Total pop. 56,570; sq. m. 15,823.

By the last census (1831) the population of Lower Canada is thus classified:—The number of proprietors of real property is given at 57,891, and the extent of land occupied by them at 3,981,793 statute acres. The number of persons living in 1831, who were deaf and dumb, is stated to have been 408, the blind 334, and the insane 924. The number of inhabitants professing the Roman Catholic faith, in 1831, is given at 403,472; the persons in connection with the Church of England were 34,620; those belonging to the Church of Scotland amounted to 15,069. There were only 107 Jews; the remainder of the population were Methodists, Baptists, Presbyterians, not in connection with the Church of Scotland, and other sects. The number of families employed in agriculture was 50,824, employing among them as farm servants only 7,602 persons. There were in the same year (1831) 2,503 families engaged in commercial pursuits, and 1,282 persons subsisting on alms. The number of inhabited houses is stated to have been 82,437—the number being built 1,458, and the vacant 1,542; making a total of 85,437.

The total seigneurial population of the counties, according to the census of 1831, was 385,237, and the total of the township population 52,695. The seven counties from Ottawa to Megantic, inclusive, either contain a majority or consist exclusively of population resident in townships. Gaspé and Bonaventure are inhabited by a very mixed population, chiefly engaged in the fisheries. In the rest of the counties the major part of the population is seigneurial. The inhabitants of the seigneuries may, for general purposes, be reckoned as French by origin; the inhabitants of the townships as English. The census of 1831 estimated the whole provincial population at 511,917, and stated the number of Roman Catholics to be 403,472, leaving, therefore, 108,445 to be Protestants, none of whom could be of French origin. Of the Catholics, it is reasonably estimated that 50,000 are of British origin, and the statement must therefore be satisfactory that in 1831 the total number of inhabitants of British origin was 158,000, whilst that of French origin was 353,000.

The Upper Canadians are a different people from the French *habitans* of the Lower province, the former being of British (and in a few instances, of American) birth or descent. The earliest European settlers in Upper Canada were some French families, who settled near the banks of the Detroit and on the St Lawrence, previous to the British acquisition of the province; after which period, the settlements of Europeans, or of loyal inhabitants from the United States, began to be encouraged. In 1806 the population was estimated at 70,718, in 1811 at 77,000; but the war with the United States tended much to check the prosperity, and with it the increase of population in the province. According to some returns the number of males and females stood in the following years thus—1821, m. 65,792, f. 56,795—total, [illegible]. 1828, m. 99,465, f. 89,093—total, 188,558; [illegible] m. 151,081, f. 100,386—total, 251,467.

Happily, however, some more complete documents than the foregoing are in existence, which are the only returns furnished by the Colonial office, to the statistical department of the board of trade.

The Population of Upper Canada, deduced from the returns to the House of Assembly.

Districts.	1823	1827.	[illegible]	[illegible]	[illegible]
Eastern - -	14679	[illegible]	[illegible]	[illegible]	[illegible]
Ottawa - -	2560	[illegible]	4436	[illegible]	[illegible]
Johnston - -	14741	16719	21961	[illegible]	[illegible]
Bathurst -	10121	12307	[illegible]	[illegible]	[illegible]
Midland - -	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Newcastle -	9293	[illegible]	[illegible]	[illegible]	[illegible]
Home - - -	16609	[illegible]	[illegible]	[illegible]	[illegible]
Gore - -	13157	[illegible]	[illegible]	[illegible]	[illegible]
Niagara - -	17552	19600	21974	[illegible]	[illegible]
London - -	17539	18912	26180	[illegible]	[illegible]
Western - -	[illegible]	7966	[illegible]	[illegible]	[illegible]
Total	151097	[illegible]	[illegible]	[illegible]	[illegible]

Rate of Increase in the general Population of Upper Canada, from the year 1824 to [illegible], inclusive

Date.	Population.	Increase.	Date.	Population.	Increase.
1824	148201		1831	[illegible]	[illegible]
1825	156836	7535	[illegible]	[illegible]	[illegible]
1826	164703	7815	[illegible]	[illegible]	[illegible]
1827	175128	10429	[illegible]	[illegible]	[illegible]
1828	186345	11217	[illegible]	[illegible]	[illegible]
1829	196704	10359	[illegible]	[illegible]	[illegible]
1830	211569	14863			
Average increase from 1824 to [illegible] per. an.					[illegible]
— — — [illegible] to [illegible] —					[illegible]
— — — 1832 to [illegible] —					[illegible]
Gen. aver. increase 1824 to [illegible] —					[illegible]

The foregoing is exclusive of the Indian population, whose numbers, though fast diminishing, amount, according to some estimates, to [illegible].

Quebec and Montreal are the shipping ports of *Upper* as well as *Lower* Canada.

The following is a statement of the number of vessels cleared out at Quebec for the following ports in 1833, 1834, 1835:

	London.		Liverpool.	
	Ships.	Tons.	Ships.	Tons.
1833 Oct. 25	109	[illegible]	[illegible]	[illegible]
1834 — 31	111	[illegible]	[illegible]	[illegible]
1835 — 26	96	23,134	[illegible]	[illegible]
Loading —	21	[illegible]	[illegible]	[illegible]

	Clyde.		Cork.		Dublin.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
1833 Oct. 25	43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1834 — 31	36	[illegible]	42	[illegible]	[illegible]	[illegible]
1835 — 26	45	[illegible]	19	[illegible]	[illegible]	[illegible]
Loading —	9	[illegible]	7	[illegible]	3	[illegible]

	Belfast.		Hull.		[illegible]	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
1833 Oct. 25	31	8,434	21	[illegible]	[illegible]	[illegible]
1834 — 31	44	12,211	[illegible]	[illegible]	[illegible]	[illegible]
1835 — 26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Loading —	3	943	6	[illegible]	7	[illegible]

The following enumeration of the articles (in quantities) exported from Quebec by sea, in the year ending 5th January, 1834, will indicate the staple produce of the colony.

Quebec. Ashes, pot, 7579 brls. Do. pearl, 5175 do. Apples, 388 do. Beef, [illegible] do. [illegible] half-barrels, 484. Beef, round, and Tongues, 18,887 lbs. Butter, 26,936 do. Biscuit, [illegible] cwts. Flour, 59,651 brls. Fish: Alewives, do. [illegible] Cod, 5617 cwts. Herrings and Mackerel, [illegible] [illegible] Ditto, 175 boxes. Shad, 118 brls. Salmon, [illegible] tierces. Do., 59 brls. Do., 23 half-brls. Grain: Wheat, 106,301 minots. Indian meal, 476 brls. Oats, or Rye, 429 do. Flaxseed, 1345 min. Oats, 6185 do. Do., 1882 bags. Pease, 1748 min. Hams and Sausages, 43 kegs. Do., 10,884 lbs. Lard, 13,020 do. Pork, 10,118 brls. Do., 399 half-brls. Timber: Ash, 1394 tons. Birch and Maple, 486 do. Elm, 11,528 do. Oak, 26,125 do. Pine, 188,778 do. Broad planks, 4804 do. Battens, 89,478 pieces. Billets, 174 do. Deals, 2,083,302 do. Deal-ends, 69,865 do. Masts and Bowsprits, 776 do. Spars, 3104 do. Knees, 230 do. Oars, 17,973 do. Hoops, 77,990 do. Treenails, 23,756 do. Shingles, 37,100 do. Lathwood, 1946 cords. Staves, side and heading, 752,500 pieces Do., Pipe and Puncheon, 2,939,049 do. Do., Barrel, 848,819 do. Deal ends, 4574 do. Do., 6426 packs. Handspikes, 13,028 no. Tobacco-leaf, 5890 lbs. Furs: Beaver, 5490 skins. Bear and Cub, 264 do. Fox, 684 do. Fisher, 47 do. Lanx, 385 do. Minx, 530 do. Martin, 4536 do. Musk-rat, 16,848 do. Otter, 729 do. Racoons, 4 do. Wolverine, 16 do. Castorum, 169 lbs. Seal skins., 30 packs. Buffalo, 31 skins.

The maritime exports for the same year (1834,) from Montreal, which first became a port of entry in 1831, were as follows:

Montreal. Ashes, Pot, Canada, 14,091 brls. Ditto, United States, 1334 do. Do., Pearl, Canada, 4436 do. Do., United States, 3740 do. Apples, 107 do. Biscuits, 335 do. Bones, 2000 pieces. Butter, 103 kegs. Candles, 100 boxes. Castorum, 260 lbs. Furs and Skins: Beaver, 3811 no. Bears and Cubs, 537 do. Fishers, 249 do. Fox, 751 do. Lynx, 187 do. Martin, 8322 do. Minx, 2016 do. Musk-rat, 49,538 do. Otter, 1871 do. Racoon, 130 do. Flour, 32,218 brls. Grain: Wheat, 547,357 minots. Pease, 186 do. Hides, raw, 2510 no. Beef, 1441 brls. Pork, 1268 do. Oil Cake, 48,000 lbs. Oars, ash, 1899 no. Staves, W. I. 218,433 do. Do., Standard, 98,671 do. Do., barrel, 15,644 do. Do., Foreign 7197 do. Timber: ash, 123 tons. Birch, 7 do. do. Basswood, 3 do. Elm, 203 do. Oak, 719 do. Pine, 1092 do. Boards, 28,171 pieces. Deals, 64,788 do. Deal-ends, 5853 do. Planks, 782. Handspikes, 6020. Soap, 110 boxes. Tobacco-leaf, 14,000 lbs.

Value of the exports from Quebec and Montreal, in the year 1836; and also the corn entered at Quebec:—

Exports to Great Britain, £620,087; Ireland, £143,893; B. N. A. Colonies, £159,413; B. W. Indies, £38,886; Oporto, £1222; Jersey, £220; United States, £1,913: total, £965,635. Value of exports from Montreal, in 1836, £249,674; Barley entered at Quebec in 1836, 9,328 bushels; Wheat entered at Quebec in 1836, 364,544 do.

Recent Political Events.—The government of Canada, when it was in possession of the French, was a pure despotism, being neither checked by council nor parliament. When the province was conquered by the arms of Britain, in 1759, no conquered people could be more liberally treated than were the French colonists of Canada. Their estates were untouched, and not only was their religion (the Roman Catholic) tolerated, but the large property with which it had been invested was preserved to it entire. In 1774, an act was passed, vesting the authority in a governor, aided by a council of not less than seventeen persons, and not exceeding twenty-three in number, who had power to frame ordinances, but not to levy taxes, except for making public roads and erecting a few local structures. By this act, the French law, which had been temporarily superseded, was restored. In 1791, a constitution, devised by Lord Grenville, and introduced by Mr Pitt, was granted to Canada. By this constitution, it was intended to assimilate the form of government in Canada to that of England. The governor stood for the king; a legislative council, appointed by the crown, for the house of lords; and a legislative assembly, elected by the people, for the house of commons. The qualification of an elector for the assembly was fixed at forty shillings in land in the county districts, and owning a house of five pounds rental, or renting one of ten pounds, in the towns. The division into representative districts was left to the governor. One important branch of the measure was the separation of the provinces of Upper and Lower Canada. Lower Canada was for the most part inhabited by descendants of the French, who were Roman Catholics, and had their own French laws, including very peculiar laws affecting the tenure of land. Upper Canada was peopled by emigrants from the former British provinces, now composing the United States, and by English settlers, chiefly if not entirely Protestants, and attached to the laws and customs of England. With the wish to give the English in Canada the advantages, which, as they alleged, they lost by the act of 1774, there was also a desire to secure to the French Canadians their religion and customs; and this liberal policy, it was thought, would be most effectually realized by separating them from the rest of the colony. A distinct constitution was therefore appointed for each.

The endeavour to assimilate the constitution of Lower Canada to that of Britain was perhaps unfortunate, inasmuch as the position of a dependent colony, formed of aliens, is different from that of an independent country. The constitution of Britain provides a supreme power, whereas it was not contemplated to give supreme power to Canada; and however liberally the colony might be governed, there must always be questions to be decided by the parliament of Britain, without reference to the wishes or even the interests of the colony, such as questions of peace or war, of trade with other colonies, with foreign countries, &c. It is now, also, a recognised principle in the working of the British constitution, that the ministry should command a majority in the house of commons. The sovereign, though able to name or dismiss his advisers at pleasure, is obliged to appoint those only who are acceptable to a majority of that house, otherwise the business of the public could not be long prosecuted with advantage. In Lower Canada, on the other hand, the executive was entirely independent of the house of assembly; the one branch of legislature was almost solely British, the other French; and for a long series of years the parties in the assembly who commanded large majorities were, on that special ground, excluded from every ministerial office. Lord Durham has given it as his opinion that much of the cause of Canadian disturbances lay in national antipathy; but this national hostility is only of recent growth, for during the war of independence with America, and the war of 1813, the French Canadians displayed every feeling of attachment to the British government, and rejected all invitations of fellowship from the enemy. The *habitans*, in fact, ever since they came under British domination, have had every reason to be satisfied with the degree of civil liberty and worldly prosperity which they have enjoyed. Their religion has been allowed to retain all its privileges and property; their taxes have been exceedingly light, and their security of person and property as complete as in England. The contest with Britain, therefore, has arisen less from any real grievance or oppression, than from a struggle of the popular portion of the legislature to obtain entire control over the executive departments of government.

Foremost among the points at issue was the matter of *finance*. We shall not here trace the earlier struggles of the assembly. It will be sufficient, in the account of more recent events, to commence with the year 1828. For some time previous to that year, the expenses of the civil government of Lower Canada were provided by the revenues imposed by the act of 1774, and appropriated by the English treasury, partly by a sum of £5000 per annum previously appropriated by the Canadian legislature, and partly by revenues levied within the province, and at the disposal of the assembly from time to time. The system of defraying a part of the expenses by annual votes of the assembly was new about the year 1818, and arose out of the desire of the assembly to acquire the control of the purse. They now put forward two claims: first, they insisted upon their right to appropriate and control the whole of the expenditure, not confining themselves to that which was provided by their own votes; and secondly, they denied the right of the crown to apply the duties under the act of 1774. It is obvious, and was afterwards admitted, that so long as the assembly was called on to provide for and to regulate any portion of the public expenditure, it would virtually acquire a control over the whole. Impressed probably with this opinion, and desirous of conciliation, a committee of the house of commons, in 1828, recommended, that "the receipt and expenditure of the whole public revenue," including the duties of 1774, and apparently including also the hereditary revenues of the crown, "should be placed under the superintendence and control of the house of assembly;" but they proposed to annex this condition, that the governor, judges, and members of the executive council, should be made, by a permanent provision for their salaries, independent of the annual votes of the assembly. This report seemed to give general satisfaction to the colony, and the assembly appeared to limit their demands to the complete fulfilment of its provisions. They promised a civil list when "*the whole* public revenue arising within the province should be given up to them;" and lord Goderich, then secretary for the colonies, felt that it would be more generous, and fancied it would be equally effectual, were he to give up the revenues *first*, and trust to the assembly for granting a civil list afterwards. This he accordingly did, but he still reserved in the hands of the British government certain revenues known as the casual and hereditary revenues of the crown. This reservation was deemed very unsatisfactory, and the assembly passed a resolution that "under no circumstances, and upon no consideration whatever, they would abandon or compromise their claim to control over the whole public revenue." They determined, therefore, not to grant any permanent supply, and on the 8th March, 1831, they drew up a long list of grievances, which was presented to the governor (lord Aylmer), who transmitted it to the colonial office, with an admission that many of the complaints were well-founded. The government, in reply, declared that there was scarcely a point which it was not willing to concede, and the assembly expressed their satisfaction at the feelings of kindness and good-will manifested towards them by the government. In 1832, the assembly passed a supply bill, providing, or very nearly, for all the demands of government, and there were in this session other indications of a reasonable disposition in the assembly. In 1833 also, the assembly passed a bill of supply, but they now annexed to some of their grants certain conditions, which induced the legislative council to reject the bill. These conditions afforded the first instance of the exercise by the assembly of the power of the purse. To the grant of salary to each person holding office, all of whom were mentioned by name, they added a proviso, that he be not a member of the legislative council, or, as to others, of the executive council. The salaries of the judges were made conditional upon their not holding any other office under the crown. Mr Stanley, then secretary of state, gave orders for paying official persons out of that part of the revenue which had not been surrendered by lord Goderich.

In the same year, the assembly first proposed to make a fundamental alteration in the constitution of 1791, by making the legislative council elective. In 1834, similar contumacy prevailed in the assembly, and in this year a fresh appeal was made to the British parliament, and a new committee appointed to consider the petition of the assembly. It was in this year that the assembly passed their ninety-two celebrated resolutions, in which throughout the whole there are scarcely disguised threats of an intention to throw off the allegiance of the colony, and to apply the elective principle not only to the legislative council, but to the executive government. They declined also this year to pass any bill of supply whatever, and made a peremptory demand that the legislative council should be elective, without which nothing would be accepted as satisfactory. Changes of ministry in England, about this time, prevented immediate attention to Canadian affairs; but on the restoration of the Melbourne cabinet, a commission of inquiry was sent out, consisting of the earl of Gosford, Sir Charles Edward Grey, and Sir George Gipps. The first of these succeeded lord Aylmer as governor, and in his opening speeches professed the most conciliatory views towards the French or popular party. The address of the assembly was civil, but reiterated the demand of an elective council. Meanwhile Sir Francis B. Head, who was sent out to Upper Canada, made public part of the instructions of the British government, by which it appeared how little they were prepared to concede the demand of an elective council. Upon this the assembly was in a flame, complained that lord Gosford, by his smooth language, had deceived them, and insisted much more urgently than ever that the council should be elective, tracing its present constitution (the members being appointed by mandamus from the crown) to the prevalence of the aristocratic principle in 1791. The legislative council, indignant at the violent endeavours of the assembly to overthrow it, vented their resentment by rejecting almost every bill sent up from the latter; and thus the two branches of the legislature were thrown into unhappy collision with each other. The assembly voted a supply for six months only, in order to give time for the British government to comply with their demands, but this was rejected by the legislative council, on the ground that several salaries were omitted. The assembly afterwards declined to vote supplies at all until their alleged grievances were redressed, and resolved that they should not even meet for business until the principle of an elective council had been recognized. The members had already begun to disperse, when lord Gosford, on the 4th Oct. 1836, prorogued the assembly.

The first report of the commissioners recommended various changes, in the hope of conciliating the Canadians; but by November, 1836, this hope had been entirely dissipated, and the final recommendations of the commissioners were measures of coercion and the exercise of arbitrary power, hinting, as an alternative, at the total suspension of the constitution. On the 6th March, 1837, lord John Russel proposed, in the house of commons, ten resolutions on the affairs of Lower Canada; among which were, "That in the existing state of Lower Canada, it is unadvisable to make the legislative council of that province an elective body, but that it is expedient that measures be adopted for securing to that branch of the legislature a greater share of public confidence:" "That while it is expedient to improve the composition of the executive council, it is unadvisable to subject it to the responsibility demanded by the house of assembly of that province." The eighth resolution declared that the arrear of £142,000 should be defrayed, first, out of the king's hereditary, casual, and territorial revenue, and then out of any other part of his majesty's revenues in the hands of the receiver-general of the province.[*] By a ninth resolution it was declared, that the hereditary revenue was to be given up in case the provincial legislature should see fit to grant to his majesty a civil list for defraying the necessary charges of the administration of justice, and for the maintenance of certain of the principal officers of the civil government. However slight the hope was that the resolutions of parliament would induce the assembly to vote the supplies, and go on with the business of the colony, it was doubtless right to give them an opportunity, and accordingly the two houses were convened on the 18th August. Before this time, seditious meetings had taken place, and votes were adopted in the most violent language of hostility, such as to induce the governor to call for troops from Nova Scotia. The assembly repudiated the parliamentary resolutions by a great majority,[†] and on the 26th of August, lord Gosford prorogued it.

Matters had now reached a crisis. Meetings of the malcontent party were held in various districts of the colony, and preparations were making for having recourse to arms. In the county of Two Mountains an active training was carried on, and all loyal or neutral residents were compelled to quit the territory. In the more populous portion of the Montreal territory lying south of the St Lawrence, a meeting was held, in which all principles but those of the purest democracy were renounced, and M. Papineau was chosen leader. On the other hand, loyal associations were formed, and volunteer corps rapidly organized. Government resolved immediately to arrest the most active agitators. A warrant was accordingly issued at Montreal against twenty-six, of whom seven, including Papineau, were members of the assembly. Nine were apprehended, but Papineau escaped. Two prisoners were rescued near Longueuil by the insurgents. On the 26th Nov. 1837, Lt.-Col. Wetherall attacked a fortified position of the insurgents at the village of St Charles, which he carried and fired. 300 of the malcontents are said to have fallen in this affair. About the same time Colonel Gore advanced upon St Denis, but owing to the smallness of his force was repulsed. St Denis and other strongholds of the rebels were evacuated on the destruction of St Charles. On the 13th Dec. Sir John Colborne, commander in chief, marched from Montreal at the head of the expedition to attack the chief post of the rebels at the Grand Brulé. On the following day an engagement took place in the churchyard of St Eustache, when the loyalist arms proved victorious, eighty of the enemy having been killed, and 120 taken prisoners. On the 15th, Colonel Maitland marched to St Benoit, the chief town of the Grand Brulé district, but on his approach, a large party of the inhabitants came out bearing a white flag, and begging for mercy. He entered the place without resistance, but some of the houses were fired by the loyalists, who could not be restrained from acts of violence. On the 13th Dec. Dr Wolfred Neilson, one of the rebel leaders, having been nine days concealed in the woods, was brought in prisoner to Montreal.

Lower Canada was now reduced to comparative tranquillity, but Upper Canada meanwhile was in insurrection. Many of the inhabitants of that province were emigrants from the United States, to whose institutions they were naturally partial, and many British residents had adopted extreme democratical opinions. This party, headed by Mackenzie, Duncombe and others, in 1834, obtained a majority in the Assembly, and, like the other province, drew out a long list of grievances, complaining, among other matters, of favouritism in the bestowal of offices and in the support of particular religious establishments, and urging, like the assembly of Lower Canada, a demand for an elective legislative council. Proceeding in the same hostile spirit, they, in 1836, for the first time, stopped the supplies, and Sir Francis Bond Head, governor of the province, on the 28th May, resolved to make an appeal to the people by a new election. After an arduous contest, the new assembly displayed a decided majority in support of the constitution. The disaffected complained that this result had been produced by extraordinary grants of land and even by violence, which allegations were declared, on the other hand, to be utterly false. So assured, at this time, was Sir Francis Head of the loyalty of the Upper Province, that on being requested to state what soldiers he could spare for Lower Canada, his answer was, ALL. Every soldier was removed out of the district, Sir Francis relying entirely on the loyal disposition of the majority of the inhabitants. In this state of things, Mackenzie, with a body of rebels, resolved to attack Toronto, but they were met and repulsed on the 7th Dec. by Sir Francis, at the head of the armed citizens. Twenty-five of the rebels were killed, while not a loyalist was even wounded. Mackenzie fled to the town of Buffalo, and excited considerable enthusiasm in his cause. With a small body he took possession of Navy island, situated on the Niagara, where he was joined by volunteers, many of whom belonged to the United States, till the number of his force amounted to about a thousand. The island was fortified with thirteen pieces of cannon, and Van Ransselaer, Sutherland, and others acquainted with military service, took command in the armament. A small steamer, called the Caroline, was employed by the insurgents in conveying troops and stores from the American shore to Navy Island. Captain Drew, under instructions from Colonel M'Nab, resolved to attack her. She was accordingly, on the 28th Dec. 1837, boarded by the British, while lying on the American side of the river, seized, set on fire, and committed to the rapids, which soon hurried her down, a flaming mass, over the falls of Niagara. It was alleged by the Americans, that several citizens were involved in her destruction, but the British assert, that all on board, who had not been killed in the rencontre, were first put on shore before she was set adrift. A heavy cannonade was afterwards opened upon Navy Island, by two companies of regulars, with a train of artillery who had arrived from Lower Canada, and the insurgents were obliged to evacuate it on the 14th Jan. 1838. Sutherland, with a party of fugitives, hastened to the extreme west. On the 3d of March an engagement took place between her majesty's troops and the insurgents on Point Pele island, within forty miles of the western extremity of the lake Erie, near the western boundary of the British possessions. This island was occupied by the insurgents in great force, when Colonel Maitland marched against it on the night of the 2nd, with some companies of the 32d and 83d regiments, two six pounders, and some volunteer cavalry. The march was made over the ice of the lake, and at daybreak the insurgents were attacked. As the island is about seven miles long, and covered with thicket, the action assumed the character of bush fighting; but the enemy ultimately were driven to flight, leaving among their dead Colonel Bradley, the commander in chief, Major Howdley, and Captain Van Ransselaer and M'Keon. Sutherland was taken prisoner. Most of the killed and wounded turned out to be citizens of the United States. Twenty-eight men of the 32d regiment were wounded, and two killed.

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[*] Ministers afterwards, on the accession of Victoria, unwilling, as they said, to begin the government of a young queen by an act of coercion, advanced the amount by way of loan from the British revenue, to be ultimately reimbursed from the provincial funds.

[†] The minority favourable to government never exceeded [illegible] against [illegible].

Meanwhile the British government considered it indispensable, for the present, to suspend the constitution of Lower Canada; and the Earl of Durham was solicited and prevailed upon to undertake its government, as well as that of all British America. He was empowered to form a sort of representative council, composed of members from each province, but to use them merely as advisers, and to call and dismiss them at pleasure. He arrived at Quebec on the 27th May, 1838. Four days after, a band of pirates from the United States and refugee Canadian rebels, seized upon and burned the Sir Robert Peel steamer, lying peaceably at anchor in the river St Lawrence or Lake Erie, at a distance of seven miles from French Creek. Lord Durham, in his progress through the Canadas, was received cordially by all parties. Generals Sutherland and Theller, Colonel Dodge, and seven other state prisoners, were sent to England. Wolfred Neilson, Bouchatte, Viger, and others of some distinction, were detained at Montreal by Sir John Colborne, on the charge of high treason; but as an impartial jury could not be counted on for their trial, and as lord Durham's object was not to rekindle party animosities, he ordered the prisoners, on confession of their guilt, to be deported to Bermuda, under penalty of death should they return. The same penalty was to be incurred by Papineau and others who had absconded, should they be found at large within the province. This ordinance was brought before the house of peers by lord Brougham, who made a motion, declaring it to be illegal, as condemning to death without trial, and to transportation to a colony not within the jurisdiction of the governor, but, at the same time, under the peculiar circumstances of the case, proposing an act of indemnity. This motion was carried against ministers; and, having consulted the law officers of the crown, they annulled the ordinance, but at the same time conveyed to lord Durham expressions of their general approbation of his measures and of their continued confidence in his administration. Lord Durham, on hearing of his implied condemnation by the act of indemnity, declared his intention to resign and return immediately to England. The news reached Quebec on the 20th of Sept., and on Saturday the 22d his lordship publicly announced his purpose to resign, to the delegates from the provinces of Nova Scotia, New Brunswick, and Prince Edward island whom he had invited to Quebec for consultation on the project of a union of the five provinces. He did not even wait for the official accounts, nor for her majesty's permission to resign, but consulting his own hurt feelings rather than the public service, he at once broke up his administration, and on the 1st Nov. set sail for England, reaching Plymouth on the 26th. Lord Brougham was burned in effigy in the presence of an immense concourse of citizens at Quebec, but beyond this ceremony, no violence was committed.

Two days after Lord Durham's departure, an attempt was made to seize and burn the steamer Victoria, which had carried some artillery for Montreal. The vessel escaped, but the rebels possessed themselves of the town of Laprairie without opposition, and compelled the inhabitants to leave it. On the following day, they attacked the village of Beauharnois, and after a sharp conflict obtained possession of it. They captured Mr Edward Ellice, M.P. and several others, whom they sent to Chateauguay, but who were afterwards set at liberty. They established their head quarters at Napierville, and their force amounted at one time to the number of 8000 men, generally well armed. They spent successive days at this town in the indulgence of the wildest excess. Martial law was proclaimed by Sir John Colbourne on the 4th Nov. 1838, and on the same day a tribe of Caughnawaga Indians attacked and defeated a numerous body of rebels, making 75 of them prisoners. On the 8th, colonel Taylor and a body of British settlers defeated at Odellton a large body of rebels on their way to join the main body at Napierville. On the 9th the rebels broke up from Napierville, and on the 10th and 11th Beauharnois and Laprairie were retaken. Sir John Colbourne concentrated his troops on the 12th at Napierville and Chateauguay, and executed, according to the Montreal journals, a severe vengeance upon the rebels whom he found there, burning the houses of the disaffected throughout the whole district of Acadie.

An invasion of Upper Canada, by which the attention of the British commander might be distracted, and the military force of the colony divided and weakened, was part of the plan of the rebels. Accordingly, on the night of the 11th, 800 republican pirates embarked in two schooners at Ogdensburgh, fully armed, and provided with six or eight pieces of artillery, to attack the town of Prescott, on the opposite side of the river. They failed in their attempt to disembark at Prescott, but, by the aid of two steamers, effected a landing a mile or two below the town, where they established themselves in a windmill and some stone buildings, and repelled the first attempt made to dislodge them, killing and wounding forty-five of their assailants. On the 15th, Col. Dundas brought a reinforcement of regular troops, with three pieces of artillery, against the insurgents. From the water they were fired upon by Captain Sandom, who had two gun boats; and, after enduring the attack for about an hour, they hung out a flag of truce, and surrendered at discretion.

Another invasion from the American border took place on the 14th Dec. 1838. The insurgents, who amounted to about 400 men, came from Detroit, and landed at Moy, near the village of Windsor, when having set fire to a steam boat which was lying there, they proceeded to destroy the barracks and other buildings. Several loyalists were killed in cold blood; among others, assistant staff surgeon Hume, who, unarmed, accidentally fell into their hands. The militia, stationed at Sandwich, three miles below Windsor, speedily turned out, attacked the ruffians—for such was rather their character than that of political antagonists—and in a short time completely routed them, killing twenty-six, and taking as many prisoners.

Hitherto, the captives had been treated with great lenity, but it was now judged necessary to exercise greater rigour. A considerable number of the *ringleaders* were executed, and others were condemned to severe and ignominious punishments. Up to March, 1839, the whole number of rebels and pirates executed was thirty-four.

An idea may be formed of the composition of the insurgent force in Upper Canada from the following national classification of the prisoners taken at Prescott:—131 Americans, 9 Germans, Poles, and French, 8 Lower Canadians, 4 Upper Canadians, 3 Irishmen, 1 Englishman, and 1 Scotchman. It will be seen from this, that the great majority of the insurgents in Upper Canada consisted of [illegible] from the United States, or, as they called themselves, *sympathizers*;—men of the most [illegible] habits and desperate fortunes. The American government itself, from the commencement of [illegible], displayed an earnest determination to [illegible] a *strict* neutrality. The president, Van Buren, issued proclamations, warning the people of the penalties to which they would become liable by *engaging* in hostilities with a friendly power, and the congress manifested an unanimous [illegible] against any countenance whatever being [illegible] the Canadian insurgents. But the friendly [illegible] of the American legislature towards [illegible] not prevent many desperadoes from [illegible] borders from taking an active part in [illegible] of the rebels; and one of the consequences of the unhappy Canadian commotions, most to be feared, is the danger that they may ultimately lead to hostilities with the neighbouring states, in spite of every disposition on the part of the respective governments to preserve neutrality. Meanwhile, the British ministry propose to form a legislative UNION OF THE PROVINCES of Upper and Lower Canada, on the principles of a free and representative government, by which, it is conjectured, the animosities arising from race and local faction would be in a great measure removed, and the strength of the French party in Lower Canada would be neutralized by the attachment to the mother country of the Upper Canadians.

CANARIES, THE, OR FORTUNATE ISLANDS, (*a.*) situated in the Atlantic ocean, near the western coast of Africa, and belonging to Spain, are thirteen in number, of which Teneriffe, Grand Canary, and Forteventura, are the largest; Palma, Ferro, Gomera, and Lancerota, of secondary magnitude; and the remaining six little more than rocks. They were known to the ancients, and called by them the Fortunate isles, on account of the beauty of their climate.

The condition of the natives of these islands, before their conquest, by the Spaniards, in the fourteenth century, was similar to that of the people of Otaheite on their first discovery, and although in many instances their conduct was cruel and sanguinary, several of their customs, without their rude ceremonies, would not be unworthy of imitation. The language and manners of the inhabitants at the present day are nearly the same as that of their conquerors, and excepting some few local customs, their laws and religion are entirely Spanish. The original inhabitants, known by the name of Guanches, were in the habit of embalming their dead, and depositing them in care. The processes of embalming must be similar in all places; Herodotus describes those in use among the Egyptians; and Spanish writers represent the mode followed in the Canary islands as resembling it. When the preparations were completed, the body was sewn up in goat-skins, and bandaged with leather; the kings and nobles were placed in a sarcophagus made of a hollowed tree; but in all cases the corpse was deposited in a grotto destined to that purpose. They much resemble, when discovered in the present day, those of Egypt in appearance, but soon crumble into dust on being taken out of the skins in which they are wrapped. At Fer, the catacombs were walled up, and domestic utensils were found in them. The most celebrated are those at Teneriffe, between Arico and Guimar; the interior is spacious, but the entrance is in a steep cliff, and difficult of access; there are niches in the walls, in which the bodies were placed; and, when first discovered, there were upwards of a thousand mummies in the place; these are always found placed on a species of trestle, and five or six are joined together by the skin, the feet of one being sewed to that of the head of the next. The wood-work of the scaffold is very perfect. It may be noticed, that Egypt and the Canaries are, as far as known, the only countries in which the preservation of the bodies of the dead was a universal custom.

The Canary islands at times are visited by fearful tornadoes, which sweep before them the dwellings of the inhabitants. The floods from the mountains in the rainy season bring down huge blocks of stone, which crush every object they meet with in their course, and inundate the country to a fearful extent. At other times, they are visited by the plague of locusts, which devour every green thing on the earth, attack the palms, and strip the trees of their bark.

The chief produce of Teneriffe, and that for which it is most famed, is a celebrated wine, of which great quantities are annually exported. Sugar has also been cultivated here to a considerable extent; and the silk-worm is reared by the inhabitants, but not in any great number: tropical fruits also of every description grow here in great abundance. Another of their exports is *orchil*, a substance used by dyers; and in former times a great quantity of a wine called Malmsey was made in this island. At present, owing to its lying so far out of the usual track of voyagers, its exports are very trifling, if we except the wine to which it gives a name, and its orchil, which is esteemed excellent. We may also mention a kind of filtering-stone brought from Grand Canary.

The geological character of the whole of these islands proves them to be of volcanic origin, and their surface is composed of lavas of different kinds, while the craters of extinct volcanoes are visible in many places. In Teneriffe, the whole of the earth is said to be impregnated with sulphur. The island itself is a collection of mountains of various heights, in the midst of which is seen towering the gigantic peak, casting its evening shadow over the surface of the ocean for leagues in extent; and, while the shades of evening are hanging over the lower part of the island, having its summit lighted up by the rays of the setting sun. Among the numerous volcanoes which, in the lapse of time, have become wholly or partially extinct, the peak of Teneriffe is celebrated for its great altitude, its singular form, and its conspicuous and isolated situation. Its summit is between 12 and 13,000 feet above the level of the sea, and its conical crest can be seen in the air from the distance of 150 miles. The summit of the peak has at different periods been reached by adventurous travellers.

There are no rivulets or springs in the island of Ferro, the westmost of the Canaries, except on a part of the beach which is nearly inaccessible. To supply the place of a fountain, however, nature, ever bountiful, has bestowed upon this island a species of tree, unknown to all other parts of the world. It is of moderate size, and its leaves are straight, long, and evergreen. Around its summit a small cloud perpetually rests, which so drenches the leaves with moisture, that they continually distil upon the ground a stream of fine clear water. To these trees, as to perennial springs, the inhabitants of Ferro resort; and are thus supplied with an abundance of water for themselves and for their cattle. The trunk of this tree is about nine feet in circumference, the branches are not higher than thirty feet from the ground; the circumference of all the branches together is one hundred and twenty feet; the branches are thick, and extended, the leaves being about three feet nine inches from the ground. Its fruit is shaped like that of the oak, but tastes like the kernel of a pine-apple, and the leaves resemble those of the laurel, but are longer, wider, and curved.

CANARY BIRD, (*a.* to the account of the Canary in the article *Finch.*) The original stock of this bird is said to have been imported from the Canary isles about the fourteenth century; but the wild birds found there bear little resemblance, in song and plumage, to the domestic Canary.

There are two distinct species of Canaries, the plain and variegated; or, as they are technically called, the gay spangles, or mealy; and jonks, or jonquils. These two varieties are more esteemed by amateurs, than any of the numerous varieties which have sprung from them; and, although birds of different feathers have their admirers, some preferring beauty of plumage, others excellence of song, certainly that bird is most desirable where both are combined. The first property of these birds consists in the cap, which ought to be of fine orange colour, pervading every part of the body, except the tail and wings, and possessing the utmost regularity, without any black feathers, as by the smallest speck, it loses the property of a show-bird, and is considered a broken-capped bird. The second property consists in the feathers of the wing and tail being of a deep black up to the quill, as a single white feather in the wing or tail causes it to be termed a foul bird; the requisite number of these feathers in each wing is eighteen, and in the tail twelve. It is, however, frequently observed, that the best-coloured birds are foul in one or two feathers, which reduce their value.

The dispositions of Canaries are as various as their colours; some are gay, sportive, and delight in mirth and revelry, while others are sullen, intractable, and lazy. Some cocks are most assiduous in assisting the hen to build her nest, and even to hatch the eggs, while others will destroy the eggs, or tear the young from the nest, and kill them in their rage: the gray ones will never build, and the person who superintends these must make a nest for them.

Syme seems to think that these birds might be naturalized to our climate, having seen a pair flying about at liberty, probably, an experiment to try if they would breed: and he thinks they had built a nest, from their being repeatedly observed flying in and out at one spot, on the precipitous bank at St Bernard's Well, near Edinburgh.

A small breeding-cage is all that is required for rearing these birds; but where a room can be allotted to the purpose, it ought to have shrubs for them to roost and build, with plenty of water to drink and bathe in, that being indispensable for the birds. The light should be admitted into the room from the east, for the benefit of the morning sun, and the windows should have wire-cloth, that they may enjoy the fresh air. The floor of the apartment ought to be strewed with sand or [illegible] gravel, and on that should be thrown groundsel, chickweed, or scalded rape-seed; but when breeding, they should have nothing except hard chopped eggs, dry bread, cake without salt, and, once in two or three days, a few poppy-seeds. About the 15th of April, they ought to be furnished with soft hay, wool, hair, moss, and other dry materials for building the nest, which usually occupies them [illegible] days; but when the hen has sat eight or nine days, it is necessary to examine the eggs, holding them carefully by the ends, against the sun or a light candle, and to throw away the clear ones. When the young are to be reared by the stick, they must be taken from the mother on the eighth day, with nest and all. Prior to this, the food should consist of a paste composed of boiled rape-seed, the yolk of an egg, and crumbs of cake moistened with a little water: this must be given every two hours. This paste ought not to be and must be renewed daily, until the nestlings can feed themselves. The hen has generally three broods in the year, but will hatch five times in the season, each time laying six eggs.

The process of moulting, which takes place five or six weeks after they are hatched, is frequently fatal to them. The best remedy yet known is to put a small piece of iron into the water they drink, keeping them warm during the six weeks or two months which generally elapse before they regain their strength.

Canaries are also subject to repletion from superabundance of food, to epilepsy, to asthma, to ulcers in the throat, and to extinction of the voice. Repletion and ulcers may be cured by confining the bird to the cooling diet of water and lettuce-seed. For epilepsy it is usual to inflict a slight wound in the foot. Asthma may be cured by plaintain and hard biscuit soaked in white wine. For extinction of voice, the cure ought to be hard yolk of eggs, chopped up with crumbs of bread, and for drink a little liquorice root, or a blade of saffron in water. In all cases and at all times the bird should have plenty of water to bathe in.

Canaries are bred in immense numbers, both for amusement and commerce, in France, Tyrol, Germany, and in this country: those from Germany are in the least esteem, from their living only one or two years in this country, although the cock of this variety is an approved songster.

CANCER, (*a.*) At the sitting of the Academy of Sciences, Paris, January 13, 1838, MM. Baupherthuy and Adelde-Roseville addressed to the academy a detailed note on the animalculæ which are found in the contiguity of cancerous ulcers. These observations have proved the presence of animalculæ in all the cancers which they have examined. These gentlemen have sought the means which are best fitted to destroy the animalculæ, and their experiments have led them to the following results:—Brandy, the tincture of iodine, concentrated solutions of the double chloride of mercury, of the chloride of gold, of arsenic, of the salts of copper, of the nitrate of silver, the laudanum of Sydenham and Rosseau, kill the animalculæ instantaneously. Solutions of the same agents, in the dose of two grains to the ounce, do not make their action felt on the animalculæ before the end of a quarter of an hour or twenty minutes, but destroy them insensibly after a space of time more or less long.

CANNON, (*a.*) A great improvement has recently been effected in the construction of cannon, by which these engines of war will probably become infinitely more destructive than formerly. The improvement, strange to say, was for the first time put to the test in Turkey, under the patronage of the late sultan, who was entirely pleased with it. The inventor is a young man, named John W. Cochran, son of a merchant in New Hampshire, United States, of whom and of his invention the following particulars are given in the American periodicals:—

"Mr Cochran was brought up to no particular business. At the age of sixteen, he discovered a strong taste and passion for mechanical experiments, and was constantly occupied in the construction of machinery, which his father approving of, encouraged, and expended several thousand dollars in his behalf, in the cost of the different kinds of apparatus required. When only eighteen, he made the discovery in question, but did not perfect it until three years after. He then went to France and England, and exhibited his model cannon to Louis Phillippe and William IV. While at Paris in 1833-34, he was requested by the Turkish ambassador to explain it to the Turkish minister at London, and accordingly went to Woolwich, and performed a series of experiments before the latter personage, which gave so much satisfaction, that he urged Mr C. to visit the sultan at Constantinople, and for that purpose provided him with the most flattering recommendations to the court of the sublime porte. Mr Cochran arrived at Constantinople, February 11, 1836, was received with great distinction, and introduced to the sultan by the grand vizier. His Turkish majesty was highly pleased with the experiments made with the model, told Mr Cochran he was satisfied it would be generally adopted, and requested him to cast a twelve pounder on the same principle. He was provided with elegant apartments in Pera, raised to the dignity of master of cannon, and furnished with as many workmen as he required for the accomplishment of his task. Mr Cochran, however, finding there was no good foundry or mechanics, was obliged to undertake the work with his own hands; and though not brought up to the business of making machinery of any kind, by dint of much labour and perseverance made himself all the necessary implements, the augurs and the wooden apparatus for boring with horse power, and the preparations required for procuring the proper castings. He succeeded entirely to his wishes, and cast and bored three cannon, two of one pound each, and the third, a twelve pounder, which last was finished in a style as perfect as he could have desired. On the 14th September following, he proved this last piece to his entire satisfaction, in the presence of all the Turkish government, who were delighted with its execution, and made a highly flattering report to the sultan. He fired it off in the presence of those officers to their utter astonishment a hundred times in fifteen minutes. The sultan, when he heard of it, could scarcely believe it, and directed Mr Cochran to perform the same experiments in his presence. The most extensive preparations were accordingly made for this important trial, which was to take place at Tarache, on the European side of the Bosphorus.

"No less than three thousand troops were assembled at this spot. The sultan at the hour appointed came over from his summer residence on the Asiatic shore, rowed in one of his splendid vessels, and preceded by a long line of other boats of the same description. As the vessel was nearing the wharf, Mr Cochran, at the suggestion of Halil Pacha, the sultan's son-in-law, and commander in chief of the land forces, fired off a salute of twenty-one guns (the customary number), with the experimental cannon, which consumed less than two minutes, and struck the assembled multitude with amazement. As the sultan at this moment stepped on the wharf, Halil, accompanied by the grand vizier and other dignitaries, ran to his majesty, and the former making the usual salaam of kissing the sultan's foot, announced to him with feelings of exultation that could scarcely be repressed, the wonderful success of the machine-cannon, as they appropriately named it. The sultan, arrived at his tent, sent for Mr Cochran, and after a short conference, in which Mr Cochran conversed chiefly in the Turkish language, which he had partially acquired, the sultan, renewing his expressions of kindness, requested him to perform the experiment in his presence. The cannon was fired as before, a hundred times in fifteen minutes, during which the barrel acquired 650 degrees of heat, while the revolving cylinder which contained the charges was comparatively cool, being only 250 degrees of temperature. The sultan asked for the bill of expenses, and being told by Mr Cochran that it was left to his own pleasure, he went the next day at the request of the sultan, to visit him at his palace. The bag of gold he there received was truly an imperial present, and enough to make his fortune. Mr Cochran soon after returned to America, with the understanding that he should have a contract for supplying a large number of cannon of the pattern exhibited, whenever it could be agreeable for him to execute it." His invention has since been taken into consideration by the American Institute, with what result we have not heard; but a recent New York paper states that the patent right of the *many-chambered non-revolving rifle*, as it is called, has been sold by the inventor to a company, for the enormous sum of three hundred thousand dollars.

CAPELIN; a small and delicate species of fish, greatly resembling the smelt. It visits the shores of Newfoundland and Labrador about the months of August and September, for the evident purpose of depositing its spawn upon the sandy beaches. At such times, the swarms of these fish are so numerous that they darken the surface of the sea for miles in extent, whilst the cod prey upon them with the utmost voracity. The manner of the capelin's depositing its spawn is one of the most curious circumstances attending its natural history. The male fishes are somewhat larger than the female, and are provided also with a sort of *ridge*, projecting on each side of the back-bones, similar to the eaves of a house, in which the female capelin is deficient. The latter, on approaching the beach to deposit its spawn, is attended by two male fishes, who huddle the female between them, until her whole body is concealed under the projecting ridges before mentioned, and only her head is visible. In this state they run, all three together, with great swiftness upon the sands; when the males, by some imperceptible inherent power, compress the body of the female betwixt their own, so as to expel the spawn from an orifice near the tail. Having thus accomplished its delivery, the three capelin separate; and paddling with their whole force through the shallow surf of the beach, generally succeed in regaining, once more, the bosom of the deep. It is an entertaining sight, while standing upon the shore, to observe myriads of these fishes, forsaking their own element, and running their bodies on the sand in all directions. Many of them find it totally impossible to return to the water, and thus the beaches of Labrador are frequently covered with dead capelin.

The cod are taken with hooks baited either with capelin or herring. Dried capelin have of late years come to be used in London as a relish for the breakfast table.

CAPE OF GOOD HOPE, (*a*.) The aboriginal inhabitants of the southern extremity of the continent of Africa, may be divided into three principal groups; the Hottentots, the Bosjesmen, or *Bushmen*, and the Caffres. The Hottentots were the original inheritors of the country now forming the colony of the Cape; the Bushmen are the wild tribes of Hottentots driven beyond the boundaries of the colony by the settlers; and the Caffres are a distinct race of warlike natives, possessing the south-eastern portion of the continent beyond the boundary-line of the colony. (See the article *Caffres* in Supp.)

The Cape of Good Hope was unknown to the ancients, unless full reliance is placed on the account given by Herodotus, of the Phoenician navigators, who, sent on a voyage of discovery by Necho, king of Egypt, are said to have sailed down the Red sea, and returned to Egypt by way of the Mediterranean. This solitary fact excepted, the southern boundary of the great continent of Africa was utterly unknown to the civilized world until it was discovered by the Portuguese in their daring attempts to find a passage by sea to the East Indies. The first European who came in sight of the Cape, was the Portuguese navigator Diaz, 1493; but the bad weather he experienced was so great that he was obliged to relinquish his enterprise, and return to Europe, naming the inaccessible land the Cape of Storms; but the king of Portugal, John II., conceived better hopes from its reported appearance, and bestowed upon it its present name of the Cape of Good Hope.

In 1497, the celebrated Vasco de Gama doubled this celebrated Cape, and opened the way to the discoveries afterwards made in the East Indies by the Portuguese. For many years after, its harbour, Table Bay, merely served as a place of refuge to the vessels of the European nations, whose enterprise led them to that quarter of the globe.

In the year 1650, the Dutch first effectually formed a settlement in this spot. But thirty years previous to this, the captains of two ships belonging to the East India Company of England had taken formal possession of the land in the name of king James I. A full account of the transaction is entered on the journals of the Company. The first part of the coast which was colonized by the Dutch, was on the banks of the Great Fish river; but this was soon abandoned, on account of its bad harbourage, and De la Goa bay, further north, was selected in its stead. Soon afterward, the representations of Van Riebeck, a surgeon of one of the Dutch ships, induced the managers to remove the colony to its present locality at Cape Town. The limits of the colony were gradually extended by the Dutch to nearly their present dimensions, and they remained in undisturbed possession until it surrendered to the British in 1795. It was, however, restored at the peace of Amiens in 1802, but again taken in 1806, and since then has remained in the hands of the British.

The history of this country, from its first colonization almost to the present time, consists of a series of unjust measures and cruel acts, perpetrated by the settlers against the natives. The Dutch government, in first taking possession of the coast, did so with the simple intention of occupying it as a useful possession for the purpose of refitting their vessels engaged in the East India trade, and supplying themselves with water and other necessaries. As a proof that the intentions of the Dutch government were good, we find the resolutions of the council in 1651 contain a public supplication to the Almighty for the diffusion of the principles of the reformed Christian religion among the natives, then only known by the name of the *Bruteele Menschen*, (wild brute men); and for many years afterwards every effort was made to conciliate them, by fining and punishing those ill-used them, by forbidding retaliation, and endeavouring to prevent their being provoked by ill-language. This mode of annoyance seems to have been so prevalent, that it was ordered they should not be called *Zwarte stinkende honden*, (black stinking dogs): on account of the indisposition of the government to extend their territory, it was not until twenty years after their first settlement that they became possessed of any considerable portion of land. By that time they had obtained power over that part of the present colony known by the name of Cape District, the inoffensive Hottentots offering but little opposition. They soon discovered the predominant passion of this weak and peaceable people for spirituous liquors, and that a bottle of brandy was a passport through every horde. With this, and tobacco, iron, and a few paltry trinkets, they purchased a part of the country, and of their stock in cattle, and then took the rest by force. A cask of brandy was the price of a whole district; and nine inches in length of an iron hoop the purchase of a fat ox. The boors, or Dutch farmers, although against the wishes of the government, still continued to extend the boundaries of the colony by fresh encroachments, pushing on from one spot of good pasturage to another, dispossessing the natives, and committing the most unparalleled acts of barbarity. The consequence was, that the original inhabitants rapidly decreased, and when the British took possession of the colony, that which had been a thickly populated country, was found to contain within its boundaries but 15,000 of the native Hottentots, and these in a state of abject slavery. During a series of years, the only alleviation of their miseries which the aborigines experienced, arose from the exertions of the Christian missionaries, who, under great disadvantages, undertook their conversion, and their instruction in some of the arts of civilized life.

The country at present occupied by the colonists is about 600 miles from east to west, with a mean breadth from north to south of 233 miles, containing nearly 140,000 square miles. Although it contains considerable tracts of excellent pasturage, the greater portion of its surface is occupied by sandy and sterile plains, and ranges of naked and inaccessible mountains: but this remark does not apply to all parts, particularly to its eastern boundary, Albany District, or to the country of the Caffres beyond the borders, which is covered in great part with the most luxuriant vegetation.

Cape Town, (*a.*) the capital of the colony, stands on a gentle declivity sloping towards the sea. On every side except this, it is surrounded by lofty mountains. It is a regular and neat-built town, and well watered by a plentiful stream which issues from the Table Mountain. Many of the streets are of considerable breadth, having canals of water running through them, which are walled in and planted on each side with oaks, but others are narrow and ill-paved. They are all straight, however, being laid out in a line, and intersect each other at right angles. The houses are in general built with stone, and whitewashed; and the greater number are two stories high, with flat roofs. Three spacious squares give the town an open and pleasant appearance; the public market is held in one; another is the common resort of the farmers and planters, with their waggons; and a third is used as a parade for exercising the troops. This last lies between the town and the castle, and has two of its sides completely built up with large and handsome houses. The castle stands a little east of the town. It is a pentagonal fort, surrounded with a ditch and regular outworks, and contains within its walls the Lombard-bank, the orphan-chamber, and most of the public offices of government. It also affords accommodation for 1000 men with their officers, and has magazines for artillery, stores, and ammunition. The barracks, originally intended for an hospital, granaries, &c., which, with its two wings, occupies a part of one of the sides of the great square, is a large and regular edifice, and has sufficient convenience in the upper part of the building for 4000 men. The other public buildings are the Calvinist church, the Lutheran church, the court of justice, the guard-house, and the theatre. Behind the town, on the acclivity of Table Mountain, is the government-house, and a beautiful public garden, which is an oblong piece of ground, containing about forty acres of rich land, divided into forty-four squares by oak-hedges. Part of it has been appropriated for the reception of scarce and curious native plants, and for experiments upon such Asiatic and European productions, as may seem most likely to benefit the colony. Over the same acclivity are also scattered a number of handsome villas, each of which is surrounded by plantations and gardens. Besides the castle, the town is defended by many other forts and batteries placed on different eminences.

In 1831, the population of Cape Town was 19,186; there being of males 9331, and 9855 females. It may now be estimated at above 20,000, of whom upwards of 10,000 are white inhabitants, the majority being Dutch or of Dutch descent.

The celebrated mountain called *Table Mountain* extends from east to west for the length of two miles. The bold face that rises almost at right angles to meet this line, is supported, as it were, by a number of projecting buttresses, that rise out of the plain, and fall in with the front a little higher than midway from the base; these, and the division of the front by two great chasms into three parts, give to it the appearance of the ruined walls of some gigantic fortress. The Table-land at the summit of the mountain is 3582 feet above the level of Table Bay. A remarkable natural phenomenon takes place here during the summer season. It is a dense mantle of vapour, called the *table-cloth*, which rests upon Table Mountain, and afterwards rushes over its precipitous sides like a cataract of foam. In summer the prevailing wind is the south-east, and it bears in some degree an analogy to the trade-winds and sea-breezes of the tropics. When sufficiently strong to surmount the Table Mountain, the first indication of the fact is a little mist, which is seen to float like a thin fleecy cloud on a part of it, about ten or eleven o'clock in the forenoon. By noon the mountain becomes fringed with dew; and half an hour later, the mist is so dense as to produce a general obscuration. In another half hour the little cleft between what is called the Devil's Berg (mountain) and the Table Mountain, pours over the cloudy vapour; and at two o'clock the first-named elevation is capped by the cloud. The Table-Cloth is now said to be completely spread; the south-east wind, having, so to speak, overflowed the towering barrier which arrested its course, now rushes down the mountain into Table Bay with resistless fury, producing loud and terrific noises as it forces its way onwards. While the Table Mountain remains covered with the dense cloud, fragments of the vapour are torn from it by the force of the wind, and are hurried about the sides of the mountain, assuming a variety of fantastic shapes, and playing about the precipice according to the direction of the different currents of wind. This phenomenon lasts till about five in the afternoon, when a little clearing, which takes place on the western edge of the mountain, announces that the Table-Cloth is about to be folded up. By six or seven, the clearance has considerably advanced; and by eight or nine, every vestige of it is gone, and nothing is seen about the mountain but an ethereal sky and the twinkling stars. Such is the singular phenomenon of the Table-Cloth during the prevalence of the south-east wind. When it continues to blow during the night, the mantle of vapour disappears in the same manner. In this case, a little white cloud is seen suspended like a canopy over Table-Mountain early in the morning. By ten o'clock the vapour begins to curl and play about the mountain, and exactly the same phenomenon takes place as before. When the wind is only of short duration, and in a hot clear day, the first indication of the approaching gale is the vapour resting in scattered parcels on the mountain. These augment as the wind increases, but it is not till the whole elevation is covered, that it forces its way with such violence down the precipice. In the evening about nine, the Table-Cloth is gone, and with it the wind, when a calm and beautiful night succeeds. A true solution of the whole appearance, with the circumstances attending it, does not seem yet to have been given. The prevailing theory is, that the south-east wind passing over the ocean is loaded with moisture, and that the coldness of the Table-Mountain condenses it. But this hypothesis is not well supported by the fact that the south-east wind is generally of a dry and evaporative nature.

Graham's Town is the second town in the colony, and the capital of the eastern frontier; it takes its name from Colonel John Graham, who formerly commanded on the frontier. It was colonized in 1820, by three thousand seven hundred settlers, sent out from England for that purpose. Graham's Town contains about 3000 inhabitants, and 700 houses, of all descriptions, from a cottage to a mansion, rendered pleasing by the gardens and pleasure grounds with which they are intermixed. The church, which is a plain Gothic building, is the most conspicuous building in the view. There are, also, several dissenting chapels, public and infant schools, a gaol, a reading room, subscription libraries, two tanneries, and a printing-office, from which a newspaper, called the *Graham's Town Gazette*, is issued. The export-trade of this place is already considerable, and rapidly increasing.

The year at the Cape is said to be divided into two periods, called the good and the bad moonsoon; but it may properly be separated, as with us, into four. The spring, from the beginning of September to that of December, is the most agreeable season; the summer, from December to March, is the hottest; the autumn, from March to June, is variable weather, generally fine, the latter part very pleasant; and the winter, from June to September, though in general pleasant, is frequently very stormy, rainy, and cold.

Although many of the mountainous parts of the Cape colony are composed of granite, no mineral substances of any value have as yet been discovered, the chief productions consisting of wool, cattle, horses, and hides, corn, and wine. In some parts, particularly in the western extremity, many of the tropical fruits arrive at maturity, as guavas, pomegranates, oranges; and all the fruits cultivated in Europe come to perfection in every part of the colony. The numerous rivers, or rather mountain-streams, with which the country is intersected, are in few instances available for the purposes of irrigation. The principal of these are, the Oliphant's (*Elephant's*) river on the west, the Great Fish river on the eastern part of the country, and the Sunday river; many of the other streams are merely periodical torrents, which continue to flow during the rainy season.

The colony of the Cape of Good Hope is divided into various districts, viz. *Cape district*; population in 1833, (exclusive of Cape Town) 12,6[illegible]. *Stellenbosh district*; population in 1833, 16,1[illegible]. *Worcester district*; population in 1833, [illegible]. *Swellendam district*; population in 1833, 15,3[illegible]. *George district*; population in 1830, [illegible]. *Uitenhage district*; population in 1829, [illegible]. *Albany district*, (the chief location of the English and Scotch settlers in 1820) population in 1833, 10,298. *Somerset district*; population in 1833, 11,715. *Graaff Reinet*; population in 1834, 14,[illegible]. The total population of the colony may be estimated at present at upwards of 130,000, of whom it is calculated that 60,000 are whites.

The revenue of the colony in 1832 was £1[illegible]; expenditure, £126,889.

The government of the colony is conducted by a governor, nominated by the crown, aided by an executive council. A large proportion of the colonists are strongly in favour of an elective legislative assembly. Each district has a civil commissioner who acts also as a resident magistrate. The laws are administered by a supreme court, presided over by a chief justice, and two puisne judges, who hold four terms in the year.

The military establishment of the colony is three regiments of infantry, the head quarters of two being at Cape Town, and of the other at Graham's Town. There is also a detachment of royal artillery, a party of royal engineers, and a regiment of mounted riflemen, called the Cape cavalry, the privates of which are principally Hottentots.

The Dutch colonists are divided into Calvinists and Lutherans, the former of whom correspond almost entirely, in doctrine and discipline, with the Church of Scotland. In each district with a Calvinistic congregation there is a minister from the Scottish Church, with a salary of £[illegible] a year. The English or Episcopalian Church ranks next in point of numbers: it is included in the diocese of Calcutta, with a resident senior chaplain on a salary of £700 a year. The missionary societies of this country have a variety of "stations" in the colony. In April, 1829, the freedom of the press was established in the colony, and there are now several newspapers printed there—two, at least, at Cape Town and one at Graham's Town. There is also a monthly *Cape Literary Gazette*.

The staple products of the colony are corn, wine, wool, provisions, oil, aloes, and fruits. The adaptation of the country to rearing vast flocks of fine-woolled sheep is at least equal to that of Australia, and in every other respect it is, we consider, much preferable to that highly-vaunted portion of the globe as a field for emigration.

CARBAZOTIC ACID; an acid discovered by Welter, and sometimes called Welter's Bitter. It has been chiefly studied by Gay-Lussac, Dumas, and Liebig. It is formed by the action of nitric acid on indigo, aloes, silk, and some other organic substances. It forms yellow, shining scales, soluble in water, to which they give an intense yellow colour and a very bitter taste. It forms yellow crystallizable salts with the bases. That with potash is so sparingly soluble that a solution of carbazotic acid in alcohol may be used as a test for that alcali. The name is derived from its composition, which exhibits a large proportion of carbon and azote. According to Liebig, it contains, carbon 31·457, azote 14·766, oxygen 53·777.

CARBONIFEROUS FORMATION. The carboniferous series of strata, in geology, is so called because a large proportion of vegetable and animal carbon pervades the rocks composing it. It includes the mountain limestone, coal measures and shales, and sandstone conglomerates. Carboniferous or mountain limestone exists in extensive beds immediately below the strata containing coal, and *above* the gray wacke series. It is of a compact structure, varying from a light gray to a dark brown, or bluish black colour; is disposed in strata, and these alternate with clay, slate, or an impure limestone, called by the workmen *blaes*. This limestone is full of the remains of marine shells and animals, so much so as in many cases to appear entirely composed of such materials. It thus appears to have formed the bottom and shores of a former ocean, although now the strata are found broken up from their original horizontal position, forming the sides and summits of mountains, frequently of considerable height. The fossil remains consist chiefly of encrinites, orthoceratites, productus, spirifer, tenebratula. Beds of fresh water shells, and the remains of fishes and plants, have also been discovered in this limestone, affording proofs that lakes and rivers must have existed at the period of its formation. Mountain limestone lies below the coal strata of the south and south-west of Scotland; stretches into the north and western counties of England, forming mountains of considerable height; and is found to prevail in many parts of the continent of Europe and in North America. Lead ore is found abundantly in this limestone. Many of its varieties receive a fine polish, and are used as marble for domestic ornaments. It is of various colours, according to the substance contained in it, and is variegated by marine shells, alumina, iron, and other minerals. A dark blue or black variety is called Lucullite, from Lucullus, the Roman general. It is used extensively for domestic and agricultural purposes, after having been burnt in kilns. By this process the animal and vegetable matters which impart to it a dark colour are destroyed, and it becomes a pure white. The carboniferous sandstone consists of alternate beds of a white yellow or reddish colour, varying in thickness from five to ten and twenty feet, with beds of shale and coal interspersed. Below the coal seams is found a band of dark heavy matter, containing iron, called from its property of resisting great heat, fire clay. The carboniferous sandstone has evidently owed its origin to the decomposition of granite and primary schists, for it exhibits a compound of those ingredients, worn into minute particles; sometimes these are of such a size as to form millstone grits and anglomerates. The deposit has usually been formed in hollow troughs or basins, and in the deepest parts extends to 2 or 3000 feet. The alternative of shale, coal, and sandstone strata, prevalent throughout all this series, indicates a periodical deposition. There are often appearances of drifting or sudden accumulation of large masses of the sandstone, where large trees of forty and fifty feet have been carried down and lodged transversely across the strata. The vegetables discovered in the coal strata consist of a variety of species, many of them differing from plants at present in existence, and all of them indicating a tropical nature. They chiefly consist of plants allied to ferns, reeds and some species of palms. Of the trees, the greater part belong to the coniferæ or pine tribe. These coniferæ resemble the auraucarias of New Holland and South America, much more than any pines at present natives of our northern regions. There is a marked similarity between the fossil plants of the coal measures in every different region of the globe hitherto investigated, so much so that the fossils of the torrid and temperate zones are identical with those found in Melville island and Greenland. After the deposition of the coal seams in their varied horizontal position, the beds have suffered many convulsive disruptions, by which the continuity of the strata has been greatly interrupted, and many faults or slips formed, as well as portions of the seams elevated to the surface of the soil. Iron ore, either in beds, or nodules, or flat bands, is a usual accompaniment of coal strata.

CARCASSONNE; a town in the south of France, situated in the department of Aude, and on the banks of the river which gives name to the department. It lies due south from Paris, at the distance of about 390 miles in a direct line, or nearly 500 by the road. It is a place of great antiquity, having existed before the campaigns of Cæsar, who speaks of it as one of the towns existing in *Gallia Ulterior*. It is mentioned more than once by the Roman writers of a later age. On the downfall of the empire it passed successively into the hands of the Visigoths, the Saracens, and the Franks; and under the rule of the last it was subject to counts of its own, who established themselves in this part of France, and transmitted their authority to their heirs. It came into direct possession of the crown of France about the middle of the thirteenth century, being then ceded by its count to Louis IX., or St Louis, who reigned as king of France from 1226 to 1270.

Carcassonne stands on both banks of the river Aude, though the two parts into which the river divides it may be considered as almost perfectly distinct. On the right bank is the old town, or *cité*, half deserted; it is surrounded by walls, the appearance of which sufficiently denotes their antiquity, and composed of narrow, dirty streets. It contains a fine ruined castle and a cathedral; the latter was erected about the end of the eleventh century. On the left bank of the river is the lower town, which is altogether modern, and built with straight streets, crossing at right angles. It has a *Grande Place*, planted with trees, surrounded by well-built houses, and decorated in the middle with an insignificant fountain, and the usual edifices found in a middle-sized French town. Some manufactures are carried on in the town; the chief of them is that of woollen cloth, which was established in the reign of Louis XI., and much encouraged by Colbert, the celebrated minister of Louis XIV.

Carcassonne is memorable, in an historical point of view, for its share in the crusade, which was carried on, in the early part of the thirteenth century, against the Albigenses, in the south of France.

CARDONA; a town of Spain, in Catalonia, twenty leagues from Barcelona, famous for its salt mines. The mines are situated about three miles to the east of the town, and resemble a huge stone quarry about twelve miles in circumference. It is most truly an ocean of salt, for there is not the smallest particle either of mould or gravel. The salt is of the finest quality, and would alone supply the wants of Europe for centuries. The Cardonero, a mountain-stream not more than twenty feet wide, flows through the midst of the mine in a bed of salt, which looks almost like the work of human hands. For many miles of its course it deposits salt upon its banks, and the country people along its whole extent till its junction with the Llobregat, where it loses its saline qualities, use the water for culinary purposes in lieu of salt. Fine flocks of sheep feed on its banks.

The town contains a good square, a large cathedral, five or six convents, and about 3000 inhabitants. It has excellent wine, an abundance of game and fish, and large flocks of sheep and goats. It produces fine fruit, such as citrons, mulberries, and almonds; and sends large quantities of hazel-nuts and pines to Barcelona: its vegetables are excellent, but the climate is too rough for the olive, orange, or the finer fruits of the south. The inhabitants chiefly maintain themselves by the sale of various little articles cut out of rock-salt, such as rosaries, images, and animals. Provisions are uncommonly cheap, but, with all the resources which nature has scattered around them, there are but few who are affluent. Every house receives annually an aroba, 26 lbs., of salt, gratis, and plumes itself upon paying fewer taxes than any other town in Catalonia.

CAREY, William, D. D. M.A.S., of Calcutta, an eminent Christian missionary and Oriental scholar, was born at Paulerspury, in Northamptonshire, on the 17th of August, 1761. His father kept a small free-school in the village, in which he gave his son an ordinary English education; but, at a very early period, William Carey discovered a great aptitude in acquiring knowledge, and much diligence in seeking it. When he had attained the age of fourteen years he was apprenticed to a shoemaker in the village of Hackleton. There his correct deportment, and the earnest but modest and intelligent manner in which he made inquiries on religious subjects attracted the notice, and obtained for him the friendship, of the Rev. Thomas Scott, then of Ravenstone. While resident at Hackleton, and before he had reached his twentieth year, his mind became seriously and devoutly affected by the gospel of Christ, which rather increased his zeal than retarded him in the pursuit of learning. He about this time united himself in Christian communion with a Baptist congregation, and commenced village preaching, and in the year 1783 was publicly baptized at Northampton, in the river Nen, by the late Dr Ryland. Three years afterwards he was chosen pastor of the Baptist congregation at Moulton, near Northampton.

His success in biblical studies led him to contemplate the state of the heathen world with feelings of pious sympathy; and in order to retain the information on the subject which from time to time he collected, he constructed a large outline map, consisting of several sheets of paper pasted together, which he hung up against the wall of the apartment where he continued to employ himself at his business, and on which he made notes of the population, religion, and other circumstances of the several countries described. The substance of these notes he afterwards published in a work entitled "An Inquiry into the Obligations of Christians to attempt the Conversion of the Heathen."

From Moulton he removed to Leicester in the year 1787, having been invited to take charge of the Baptist congregation in that town. In this new station his zeal and perseverance gained for him many friends; and his mind still dwelling upon missionary enterprise among the heathen, he made it the constant subject of conversation with neighbouring ministers, until he had inspired them with similar views to his own, and disposed them to associate for the accomplishment of their benevolent purpose. This they did on the 2d of October, 1792, when they assembled at Kettering in Northamptonshire, and then formed themselves into a Baptist Missionary Society. The minds of the brethren thus associated were immediately directed to Carey as the most fit agent for the execution of the design. India was the field which they chose for the commencement of their operations; but here there were obstacles far greater than any which at present exist, and the disinclination of Mrs Carey to quit her native country was, in her case, a difficulty peculiar and of great magnitude. But these impediments were surmounted by zeal and devotion. Mr Carey, with Mr Thomas, a fellow-labourer, who died in India not long after his arrival, was solemnly designated to the work of an evangelist by the Baptist ministers of the midland counties, assembled at Leicester on the 20th of May, 1793; and on the 13th of June following, the two missionaries embarked on board a Danish Indiaman, accompanied by Mr Carey's whole family.

Early in 1794 they arrived in Bengal, and Mr Carey was invited to take charge of an indigo factory near Malda, the property of Mr Udney, a servant of the East India Company of high rank. He accepted the invitation, and succeeded in the establishment of a school in the neighbourhood of his factory, where he began to preach in the language of the country every Sabbath day, and on one other day in every week. In 1797, he made a journey into Bootan, and obtained the consent of the Soubah for an attempt to introduce Christianity into that country, so soon as a fit agent could be provided. In the same, and in the following years, he preached publicly in Dinagepore.

Towards the close of the year 1799 he resolved to relinquish his appointment in the neighbourhood of Malda, and to take up his residence in the Danish settlement of Serampore, a place which has since derived its chief importance and celebrity from its being the seat of this mission. Mr Carey appears to have been induced to take this step in consequence of the East India Company's government having, from political considerations, refused to permit some younger missionaries, who had been sent to his assistance, to establish themselves with him at his inland station. At Serampore, the missionaries had assurance that their object was recognised and approved by the Danish governor, Colonel Bie, and that they would enjoy adequate protection in their missionary labours; the town of

Serampore and surrounding country were also more populous than the vicinity of Malda, and afforded better accommodation and greater facilities for printing the sacred scriptures in the native languages. The mission family, upon its establishment at Serampore, consisted of the senior missionary, Mr Carey, with three younger assistants, Messrs. Ward, Marshman, and Fountain, then recently arrived from England, together with their wives and children. A school for children and youth was immediately opened, and preaching commenced; the missionaries supplying both departments of service in rotation. A printing press was also established with the consent of the governor, and under a condition that it should be confined in its operations to the printing of philological works and the scriptures in the native languages; and an edition of the scriptures in the Bengalee language was immediately commenced with the aid of types from Europe.

In 1801, Mr Carey's success in the study of the vernacular languages of India recommended him to the professorship of the Sanskrit, Bengalee and Mahratta languages at Fort William. This appointment operated very favourably for the interests of the mission, by securing for the missionaries the avowed protection, and, to a certain extent, the patronage of the government, and by furnishing the professor with more ample pecuniary means, a large portion of which he conscientiously devoted for its support.

In 1805, Mr Carey published his grammar of the Mahratta language, and in the same year opened a mission chapel in the Loll bazaar in Calcutta; but in the following year, while Sir George Barlow held provisionally charge of the government of India, the Vellore mutiny occurred, supposed to have been occasioned by the apprehension of the native troops lest the Company should determine to pursue a system of *forcible proselytism*. This event so alarmed the Bengal council that orders were issued for the discontinuance, for a time at least, of all missionary exertions. The proceedings in India consequent on the Vellore mutiny led, of course, to agitation and discussion at home, in the court of directors, the court of proprietors, in parliament, and from the press; and terminated in the removal of much prejudice and many doubts, and in settling the public mind, so as finally to overcome all obstacles in this country to the discreet employment of means for the conversion of the heathen.

About the year 1805, Mr Carey received from one of the British universities a diploma as doctor of divinity, and in the following year was elected a member of the Asiatic Society of Calcutta. From this period to the close of his earthly career, the mission over which Mr Carey presided appears to have been almost uniformly prosperous.

In 1814, the missionaries had twenty stations in India, at which the distribution of religious tracts and the sacred scriptures, together with the education of children, and at some of them preaching, were constantly carried on.

In the following year, 1815, the new charter act of 1813, which had made express provision for the moral improvement of the natives of India, came into operation, and not only gave a legal sanction to the exertions of the missionaries, as schoolmasters or teachers, but provided funds which were directed towards the same end, so far, at least, as to the education of the natives.

In the department of philology, Dr Carey's labours were great; his Mahratta Grammar, already mentioned, was followed by a Sanskrit Grammar, 4to., in 1806; a Mahratta Dictionary, 8vo., in 1810; a Punjabee Grammar, 8vo., in 1812; a Telinga Grammar, 8vo., in 1814; also between the years 1806 and 1810 he published the Raymayana, in the original text, carefully collated with the most authentic MSS. in three volumes 4to. His philological works of a later date, are a Bengalee Dictionary in three vols. 4to., 1818, of which a second edition was published in 1825; and another in 8vo. in 1827—1830; a Bhotanta Dictionary, 4to., 1826; also a Grammar of the same language, edited by him and Dr Marshman. He had also prepared a Dictionary of the Sanskrit, which was nearly completed, when a fire broke out in Serampore and burnt down the printing office, destroying the impression, together with the copy, and other property.

The versions of the sacred scriptures which have issued from the Serampore press, and in the preparation of which Dr Carey took an active and laborious part, are numerous. They are in the following languages: — Sanskrit, Hindee, Brij-Bhassa, Mahratta, Bengalee, Orissa or Ooriya, Telinga, Kurnata, Maldivian, Gujurattee, Bulooshee, Pushtoo, Punjabee or Shekh, Kashmeer, Assam, Burman, Pali or Magudha, Tamul, Cingalese, Armenian, Malay, Hindostanee, and Persian; to which must be added the Chinese. Dr Carey lived to see the sacred text, chiefly by his instrumentality, translated into the vernacular dialects of more than forty different tribes, and thus made accessible to nearly 200,000,000 of human beings, exclusive of the Chinese empire, in which the labours of the Serampore missionaries have been in some measure superseded by those of Dr Morrison.

But extensive as was the range which this ample field of science presented to the mind of Dr Carey, and necessarily indefatigable as must have been his exertions in the cultivation of it, it did not satisfy the ardour of his genius, which sought in the science of botany another field, unquestionably a delightful one, whereon to exhaust his mental energies. To the study of botany he appears to have given much attention, and to have corresponded with the botanical societies in Europe, assisting their exertions, and receiving in return similar assistance in his own, by the transfer of seeds from one country to the other. Dr Carey has also left behind him a report on the agriculture of Dinagepore, in the tenth volume of the Asiatic Researches; and a catalogue of Indian medicinal plants and drugs in the eleventh volume, under the name of Dr Fleming. But his principal service to the science of botany, and his last work, was the editing of his deceased friend Dr Roxburgh's *Flora Medica*, in three vols. 8vo.

The year 1834 terminated the labours of this excellent man. His health had been declining for several years, when, in September, 1833, a stroke of apoplexy prostrated his remaining energies, and led his friends to anticipate his speedy removal. Through the hot season of 1834 he was confined to his bed in a state of great helplessness, till at length, on Monday, June 9, he died. He was thrice married, and had several children. By his will he renounced all right to the property or premises of the Baptist Missionary Society at Serampore; or to those of his wife, Grace Carey, amounting to 25,000 rupees, more or less, which had been settled upon her. His museum, with mineral collections, and some valuable books, he bequeaths to the college of Serampore, and some legacies to his sons and books to his wife, whom he constituted his residuary legatee.

CARISBROOK CASTLE, in the isle of Wight. This castle appears, by Domesday-book, to have been built by William Fitz-Osborne, Earl of Hereford, and the first lord of the island, soon after the Norman conquest. It stands on a small hill south-west of the town of Newport, and overlooking the village of Carisbrook. The walls of the original fortress cover about an acre and a half; these are surrounded by a more modern fortification, faced with stone, of an irregular pentagonal form, defended by five bastions; these outworks, which are in circuit about three quarters of a mile, and encompassed by a deep ditch, include in the whole about twenty acres: they were added in the time of queen Elizabeth, and are said to have been constructed upon the same plan as the fortifications of Antwerp, and by the same engineer, Genebella, an Italian.

Carisbrook Castle is memorable as a prison of Charles I. That unhappy monarch, having first fled to it for refuge, was treacherously detained there by the parliament, from November 1647 to September in the following year, and the narrative of his several unsuccessful attempts to escape from it forms an interesting episode in English history.

CARLINGFORD; a small sea-port town of Ireland, in the parish of the same name, in the barony of Lower Dundalk, in the county of Louth, and the province of Leinster. It stands at the foot of an extensive range of mountains, and on the south-eastern side of the spacious and beautiful inlet, called Carlingford bay; it lies to the north of Dublin, at a distance of seventy-five miles. The origin of the town is commonly traced to the erection of the castle, whose ruins form so conspicuous a feature of the place at the present day. This edifice, which is called Carlingford castle and King's castle, is generally said to have been built by order of king John, when he was in this kingdom, about the year 1210. It was an important station during the early ages of the English dominion in Ireland; and although it was never regularly fortified, or even surrounded by a wall, it was a place of strength, from the circumstance of every house of any importance in it being a small fortress or castle, fully capable of resisting a sudden attack. Its position upon the frontiers of the English pale necessarily exposed it to frequent dangers.

On the southern side of the town, or that opposite to the side on which the castle stands, are the ruins of a Dominican monastery, of the date, as is generally supposed, of the fourteenth century; a religious house of that order was established here by Richard de Burgh, earl of Ulster, in the year 1305. Population of the town, 1300; of the parish nearly, 10,000.

Upwards of 2000 hands are engaged in the fishery; the oysters taken at Carlingford are celebrated for their delicious flavour, even in the metropolis of Ireland. The water in the extensive bay is deep, but unfortunately the entrance is obstructed by hidden rocks, which render the navigation dangerous for vessels even of moderate size; the linen and butter which the town exports are thus conveyed in small craft entirely.

CAROLAN; a native Irish lyric poet and harper, very popular in the recollections of his countrymen. His full name was Turlogh O'Carolan, and he was born in the year 1670, at Newtown, near the village of Nodder, in the county of Westmeath. He boasted of ancient Milesian descent; but the land on which he was born had been wrested from his ancestors by the family of the Nugents, on their arrival in Ireland, with king Henry II. His father was a poor farmer, the humble proprietor of a few acres, which afforded him a scanty subsistence. According to one account, somewhat too marvellous, perhaps, to be strictly true, Carolan evinced no marks of talent till his eighteenth year when he entirely lost his eyesight by small-pox. The thoughts which had hitherto wandered over the external world, were then turned inwards, and he became pensive and meditative. Near his father's house, there was an artificial mount, called in Ireland a *mote* or *rath*, one of the numerous remains of early fortifications still scattered over the island, or perhaps a seat of justice in primeval times. On this place, which the country people in latter times supposed to contain a fairy palace, the poor boy had been accustomed, while possessed of eyesight, to play with his companions. But, when unable to join in their sports, he used to cause himself to be led out to it, and would there stretch himself for hours under the genial rays of the sun. While thus solitarily reposing, he would be observed to start up suddenly, as if under the influence of some access of enthusiasm. His friends could assign no better explanation for his conduct, than that he was visited occasionally with preternatural visions, through the influence of the fairy queen. In one of these raptures he called hastily to his companions to lead him home, and when he reached the house, he sat down immediately to his harp, and in a little time played and sang the air and words of a sweet little song addressed to Bridget Cruise, who had already become the object of his tenderest regards. So sudden is said to have been this visit of the muses, and so captivating was its product, that the people firmly believed him to have been at that moment gifted with poetic and musical power by the fairies; and they still keep in remembrance the spot where he desired, on this occasion, to be led home.

A memoir, less striking, but more probable, states that Carolan lost his eyesight at an earlier period of life, and that he endured the bereavement with cheerfulness, saying, "My eyes are transplanted into my ears." It also states that his musical genius was soon discovered, and procured him many friends, who determined to aid its cultivation, and at the age of twelve, a master was engaged to instruct him on the harp. "His diligence in the regular modes of instruction," says this memoir, "was not great; yet his harp was rarely unstrung, his intuitive genius assisting him in composition, whilst his fingers wandered amongst the strings, in search of melody." His love for Bridget Cruise not being successful, he married Mary Maguire, of the county of Fermanagh, who proved proud and extravagant, but never lost his affections. On entering the connubial state, he fixed his residence on a small farm near Moshill, in the county of Leitrim. Here he built a small house, in which he practised hospitality on a scale more suited to his mind than to his means; so that, in no long time, he was thrown nearly destitute upon the world.

The trade of the wandering minstrel, or bard, had long ceased in Ireland, but the forms of society which it suited had not altogether been superseded. The Irish gentry, and many beneath that rank, had still leisure to be amused by, and liberality to reward, the talents of the musician and the poet. Carolan was eminently both. His songs were already widely famed. His manners and conversation were also of a pleasing character. He therefore found no difficulty in commencing the erratic life which he persevered in to the close of his days. It must not be supposed that he appeared as an ordinary mendicant. He was invited as a friend to live with those who were pleased to patronise him; and in general there was a competition among the gentry of Connaught for the honour of entertaining him. It is recorded that messengers would sometime be in pursuit of him for several days from place to place, to obtain the honour of a visit from the blind harper. In many instances he signified his gratitude by composing a song in honour of his host, or of some interesting member of the family. He is said to have in all composed about two hundred airs, to the most of which he gave verses. His compositions have all the wild grace and pathos which characterise Celtic music and poetry, and which shine so peculiarly in the melodies of Ireland.

Carolan was so unfortunate as to contract, in early life, a love of whisky, which greatly increased as he advanced in years. In his latter days he never composed without a bottle by his side, being of opinion that it was necessary to stimulate or awake his powers.

Carolan died in the month of March 1738, when he had attained his sixty-eighth year. He was interred in the parish churchyard of Kilronan, in the diocese of Ardagh, his funeral being attended by sixty clergymen of different denominations, a number of gentlemen from the neighbouring counties, and a vast concourse of country people, who, rude as they were, had often enjoyed the strains of their national bard.

CARR, Sir John, a writer of travel or tours, which obtained some notoriety in their day, was a native of Devonshire. He was bred to the law, which he practised at the Middle Temple; and at first had recourse to travel on account of ill health. His first publication was "The Fury of Discord, a poem," printed in 1803, in 4to. His "Stranger in France, a Tour from Devonshire to Paris," written in the same year, when the world was greedy for information respecting the character and manners of a people changed by the events of a revolution, and again after a brief peace severed from our intercourse by war, was read with avidity. The light and rapid sketches, the spirit and gentlemanly feeling which characterised his observations, led to his recurring to that branch of literature, which gratified the public whilst it benefited himself and his publisher. In the interval he published, in 1804, "The Sea-side Hero, a drama in three acts," the scene of which was laid in Sussex, on the supposed attack of the anticipated invasion; and in 1805 appeared "A northern Summer, or Travels round the Baltic, through Denmark, Sweden, Russia, part of Poland, and Prussia, in 1804." In 1806 appeared "The Stranger in Ireland; or a Tour in the Southern and Western Parts of that Country in 1805;" soon after, the author was knighted by the duke of Bedford, then viceroy. In 1807, he published "A Tour through Holland, along the Right and Left Banks of the Rhine to the South of Germany in 1806." The frequency of his productions now began to elicit remarks; and one Mr Edward Dubois ventured to satirize his trade in tours, in a little 12mo book entitled "My Pocket Book; or Hints for a Ryghte Merrie and Conceitede Tour, in 4to., to be called 'The Stranger in Ireland, in 1805.' By a Knight Errant," dedicated to the paper-makers. For this publication the booksellers were prosecuted in 1809. It appeared on the trial that Sir John Carr had received for the copyright of his Stranger in France, £100; for the "Northern Summer," £500; for the "Stranger in Ireland," £700; and for the "Tour in Holland," £600. Sir John failed in obtaining a verdict; the jury considering that "My Pocket Book" contained no personal reflection on the knight, unconnected with his writings; and in consequence his *cacoethes itinerandi* received a certain check. However, he published about the same time a work he had before in preparation, "Caledonian Sketches, or a Tour through Scotland in 1807;" and in 1811, "Descriptive Travels in the Southern and Eastern parts of Spain and the Balearic Isles (Majorca and Minorca), in the year 1809," both in quarto. In 1809 he printed a volume of Poems, in quarto and octavo, to which his portrait was prefixed. Sir John died in London, July 17, 1832, aged sixty. The Edinburgh Review, in criticising some of his tours, indulged in an Irish pun, and called him *a jaunting car*. It is but justice, however, to say that the light, cheerful character of Sir John Carr's writings was harmless, and that a lively and gentlemanly feeling pervaded his volumes. The plates which accompanied his Tours were creditable to his pencil.

CARRIAGES. Wheel carriages for pleasure are generally supposed to have first come into use in England in the reign of queen Elizabeth. But long before that time, carriages of some kind were used on state occasions, or for the conveyance of sick persons. Even in the time of the Saxons, a clumsy kind of car, upon four wheels, was employed to carry great personages; and Stow tells us, that during Wat Tyler's insurrection in 1380, Richard II., "being threatened by the rebels of Kent, rode from the Tower of London to the Miles End; and with him his mother, because she was sick and weak, in a *whirlicote*," which is supposed to have been a sort of covered carriage. "Chariots covered, with ladies therein," followed the litter in which queen Catharine was carried to her coronation with Henry VIII. But queen Elizabeth's is the first that is called a *coach*. In 1564, William Boonen, a Dutchman, became the queen's coachman, and about this time coaches were brought into general use in England. In 1588, queen Elizabeth went from Somerset House to Paul's Cross to hear return thanks on the destruction of the Spanish armada, in a coach presented to her by Henry earl of Arundel.

These coaches must have been clumsy uncomfortable machines. They had no springs; and the state of the streets and roads must have made travelling in them any thing but easy. But fashion soon brought them into such general use, that in 1607, Dekker complains that "the wife of every citizen must be jolted now." And in 1636, there were 6,000 of them kept in London and the neighbourhood.

At first they had only two horses, but afterwards the number was increased. In the reign of James I., "the stout old earl of Northumberland, when he was got loose, hearing that the great favourite Buckingham was drawn about with a coach and six horses, thought he might very well have eight in his coach, with which he rode through the city of London, to the vulgar talk and admiration."

In general, however, it was thought disgraceful in those times for the male sex to ride in coaches. "In Sir Philip Sidney's days, so famous for men at armes, it was then," says Aubrey, "held as great a disgrace for a young gentleman to be seen riding in the streets in a coach, as it would now for such a one to be seen in the streets in a petticoat and waistcoat! so much is the fashion of the times altered."

Sir Walter Scott says, that it is a tradition in Scotland, that chaises or chariots were first introduced into that country in 1745. Before that time, the nobility were accustomed to travel in vehicles somewhat resembling Noah's ark, and the gentry on horseback; but in that memorable year, the prince of Hesse appeared in a carriage of this description, "to the admiration of all Scotchmen, who regarded it as a coach cut in half."

When we compare the clumsy things in which even our kings formerly rode, with the convenient and elegant carriages of the present day, we cannot help admiring the progress which our workmen have made in this and every other branch of art.

CARRICK-ON-SUIR; a market-town of Ireland, in the county of Tipperary, thirteen miles from Waterford, and seventy-eight from Dublin. It is situated on the north bank of the river Suir, and consists of one long street extending in a direction from east to west, from which several smaller ones diverge. The trade of the place consists principally in the sale of agricultural produce and provisions, which are sent to Waterford for exportation, and to Clonmel for the supply of that town and neighbourhood. The market is on Saturday. Population of town, 6922; of parish, including town, 7445.

CARRIER-PIGEONS, (*a.*) The Carrier-Pigeon is distinguished by a broad circle of white skin round each eye, and by the dark-bluish colour of its plumage. It will convey letters from distant parts with remarkable celerity and certainty; and this arises from the natural attachment which the birds have for the places where they have been bred. The mode of employing them is to take them to the spot whence intelligence is to be brought, to tie the letter under their wing, and to let them loose. They rise to a great height in the air, then, by an extraordinary instinct, they dart onward in a direct line to their home. Out of one hundred and ten pigeons brought from Brussels to London, in the summer of 1830, and let fly from London, July 19, at a quarter before nine, A.M., one reached Antwerp, 186 miles distance, at eighteen minutes past two, or in five hours and a half, being at the rate of nearly thirty-four miles an hour. Five more reached it within eight minutes after. Thirteen others took two hours and a half more for the journey, or eight hours in the whole. Another pigeon went from London to Maestricht, 260 miles, in six hours and a quarter. In January, 1831, two pigeons, brought from Liskeard to London, were let fly from London to Cornwall. One reached Liskeard, 120 miles' distance, in six hours, the other in a quarter of an hour more.

CARRINGTON, N T., a very pleasing descriptive poet, was born at Plymouth, in the year 1777. His parents were engaged in a retail grocery business, and, at one period of their lives, were possessed of considerable property. His father was also employed, in some capacity, in the Plymouth Arsenal. When he had attained his fifteenth year, his father apprenticed him to a measurer in Plymouth Dock. "I was totally unfit (he himself says) for the profession. Mild and meek by nature, fond of literary pursuits, and immoderately attached to reading, it is strange that a mechanical profession should have been chosen for me. It was principally, however, my own fault. My father was attached to the dock-yard, and wished to see me in it; and, as the popular prejudice in those days among the boys of the town was in favour of the business of a shipwright, I was carried away by the prevailing mania, and was, accordingly, bound apprentice. This, however, had scarcely been done when I repented; and, too late, found that I had embraced a calling foreign to my inclinations. Dissatisfaction followed, and the noise and bustle of a dock-yard were but ill suited to a mind predisposed to reflection, and the quietest and most gentle pursuits. The ruffianism (I will not change the term) of too many of the apprentices, and, indeed, of too many of the men, sickened me. Let no parent place his child in the dock-yard at Plymouth, unless he have previously ascertained that his health, strength, personal courage, and general habits of thinking and acting, will make him a match for the desperate spirits with whom he will have to contend." After remaining at the Dock about four years, he resolved on "running away;" having in vain endeavoured to prevail on his parents to place him in a situation more consonant with his favourite pursuits. On leaving the dock-yard, not knowing whither to turn his steps, he entered himself as a [illegible] on board a ship of war, and served in the action which took place off Cape Finisterre, February 14th, 1797. His first verses on record were written in commemoration of this event; they attracted the notice of his captain, who, perceiving that he deserved a better situation, and that some very untoward circumstances must have occurred to induce him to seek this line of life, gave him his liberty, and sent him home to his native town. He then commenced the business of a public teacher at Plymouth Dock (now Devonport), and speedily attracted considerable attention by his acuteness in his modes of instruction. It should be here observed, that Mr Carrington was indebted entirely to his intense love of reading and research for the knowledge which he possessed; and he was often heard to remark that he recollected having learned nothing of consequence at school with the exception of reading, writing, and arithmetic, and the elements of English grammar. He subsequently went to Maidstone, in Kent, where he opened school. He remained in that town almost three years; and it may be observed that, in after life, he frequently dwelt with great delight on the recollections of Maidstone.

At the solicitations of a circle of friends at Plymouth Dock, who wished him to undertake the education of their sons, he returned in [illegible] to that town, after a residence in Maidstone of [illegible] two years; and the academy which he then established he continued to conduct till within [illegible] months of his death, being a period of [illegible] years of unceasing toil. This long course of [illegible] lently discharged duty presents none of those points of inciting interest which occur in the lives of men of more precarious and more stirring fortunes. During nearly the whole of the above-named period, Mr Carrington was employed, in his laborious duties as a public teacher, from seven in the morning in the summer till half-past seven in the evening: in the winter his labours commenced at nine in the morning, and continued till eight at night. It was after this hour that he found his only opportunities of cultivating the taste for literature with which he had been gifted by nature.

The first edition of his poem, entitled "Banks of Tamar," appeared in 1820. He had, previously to the printing of this work, published many little fugitive poems of great beauty, and which attracted much attention, particularly in Devonshire, where the author was best known. He next published "Dartmoor, a descriptive poem," the first edition of which appeared in 1826. This poem was written for the purpose of being submitted for the premium offered about two years before, for the best poem on that subject, by the Royal Society of Literature. By some accident, the premium was awarded three or four months before Mr Carrington was aware that the time of presentation had arrived. It is needless to say, that his poem was not forwarded to the Society; the author threw it by, without entertaining the slightest intention of ever publishing an effusion on what he imagined the bulk of the reading public would think a most unpromising subject. By some chance, however, the poem came under the notice of W. Burt, Esq., secretary of the Plymouth chamber of commerce, who persuaded Mr Carrington to publish it; and it accordingly appeared, with explanatory notes by that gentleman. "Dartmoor" met with far greater success than the author had ever dared to anticipate. It was received with much delight by the public; it was very highly spoken of by the periodical press; and the consequence was, that a second edition was called for not more than two months after the appearance of the first. Two or three years before the publication of "Dartmoor," the town of Devonport was seized with an unaccountable mania for subscription schools; by the establishment of the first of these academies, Mr Carrington's prosperity, in common with that of several other public teachers residing in the town, was materially injured. He still, however, struggled on; though the circumstances of his having a large family dependent on his exertions rendered the decrease of income, caused by the subscription schools, to be very severely felt by him. Towards the close of 1827 he was attacked by incipient consumption; and in a few months it was apparent that the disease would inevitably be fatal. He still, however, attended unceasingly to his school; and although reduced to a mere skeleton, and weak as an infant, he continued to discharge his scholastic duties till March, 1830,—a period of nearly three years,—when he became so completely worn out, by the inroads of the deadly complaint with which he was afflicted, that he was obliged to [illegible] all further efforts. It was during his illness, that Mr Carrington wrote and prepared for the press his last publication—"My Native Village; and other poems." In "My Native Village," he repeatedly alludes, in affecting terms, to the painful nature of his situation. In July, 1830, he removed with his family to Bath, in order to reside with his son, who about that time had become proprietor of the Bath Chronicle. By this time he was in the most advanced stage of consumption; he daily grew weaker and weaker; and on the evening of the 2d of September, 1830, he expired, apparently of mere weakness and exhaustion. As he always expressed the utmost horror of being buried in any of the "great charnel-houses of Bath" (as he used to term the burial grounds of that populous city), he was interred at Combhay, a lonely and beautiful little village about four miles from Bath.

CARTLAND CRAGS, a rugged and bushy ravine in the immediate neighbourhood of Lanark, Scotland, formed by the course of a little stream called the Mouse water, and in the recesses of which Sir William Wallace more than once took refuge while making reprisals on the English invaders under Edward. A particular cave is still shown, half-way up one of the banks, as a hiding-place of this illustrious personage. At the lower part, near the confluence of the Mouse with the Clyde, the road from Lanark to Glasgow passes over the profound chasm by a modern bridge. This bridge, which was designed by the late Thomas Telford, was commenced in 1822, and finished in little more than a year. It consists of two piers, of the height of 130 feet, forming three arches, with a perfectly level road on the top, spanning a defile of at least 150 feet in width.

CASHEL; a town of Ireland, in the county of Tipperary, situated on the road from Dublin to Cork, twelve miles from Clonmel, and seventy-five from Dublin. It consists of one principal street, from which several others diverge irregularly. The principal trade of the place consists in the sale of the produce of the surrounding country. Cashel is the seat of an archbishopric and diocese, and hence may lay claim to the title of city. The ruins of ecclesiastical establishments in different parts of the town, and on the Rock of Cashel, are highly interesting. Population of town, 6971; within the corporate lands, 12,582.

CASHEW. The Cashew or Firework Nut is about the size and nearly the shape of a Windsor bean, and is occasionally imported into this country from the West Indies, where it forms an economical source of amusement to the native children, who put it on the end of a long wire, or sharp stick, and then set it on fire, by holding it for half a minute over a flame. The nut contains a quantity of oil, and gives out a succession of vivid minute streams of fire and smoke, until the husk of the nut is burnt to a cinder. It is then easily opened, the kernel is found properly roasted, and it is eaten like an almond, to which, by many, it is thought superior in flavour.

CASSAS, LOUIS FRANCOIS; an eminent architectural artist, was born June 3, 1756, at Azay-le-Feron; and after sedulously employing his youth in studying and delineating the antiquities of Sicily, Istria, and Dalmatia, accompanied to Constantinople, Choiseul Gouffier, by whom he was selected to make drawings for the continuation of his *Voyage dans la Grèce*. Shortly after he visited the opposite shores with M. Lechwallier, the author of the classical *Voyage de la Troade*. As soon as he had finished examining the region immortalised by Homer, he proceeded to Balbec and Palmyra, whose superb remains were then known to Europe only by Wood's publication. About the commencement of the Revolution he returned to France, laden with the interesting stores he had collected during so many years of unremitted application; and the treasures of his portfolio attracted the curiosity, and obtained for him the admiration, of every lover of the fine arts and antiquity. His *Voyage d' Istrie et de Dalmatie*, by dispersing copies of his labours, rendered his name familiar to the artists of other countries. The extensive sale of his other work, *Voyage en Syrie et en Phénicie*, by occupying his pencil, prevented its completion, for although thirty parts appeared, it was left unfinished. In addition to these valuable labours, M. Cassas employed many years and considerable sums of money in forming a collection of architectural models in almost every style, which, with singular disinterestedness, he gave up to the imperial government for a trifling life-annuity. This highly interesting and valuable collection is now deposited in the Palais de l'Institut, until such time as a place shall be provided for it at the new Ecole des Beaux-Arts. M. Cassas died suddenly at Versailles, of a stroke of apoplexy, on the 1st of November, 1827, in the seventy-second year of his age.

CASTLEBAR; a town of Ireland, in the county of Mayo, forty-four miles from Sligo, and 125 from Dublin. It boasts of a handsome new church, a county jail, and extensive barracks. The linen manufacture is carried on here, but not so extensively as formerly. Its market-days, (Saturdays) are distinguished by a considerable trade in corn and other agricultural produce. Population, 6373.

CASTLETON; a village in Derbyshire, 164 miles from London and twenty-seven S. E. from Manchester; situated at the bottom of a steep eminence, whose summit is crowned by an ancient castle that gives name to the place. The castle was erected by William Peveril, natural son of the Conqueror, and from its situation was called "the Castle of the Peak," or "Peak Castle:" the extent of the ruins evinces the former magnitude of the building; they are to be approached only from the north, and that with difficulty. The entrance of the Peak Cavern, or *Devil's Cave*, at the base of the steep, is 120 feet in width, 42 in height, and above 90 in receding depth; from hence a gentle descent conducts the visitor to the interior of this tremendous hollow, which must be explored by torch-light; the entire length of the excavation is 750 yards, and its depth from the surface of the mountain 207. The houses of the village are chiefly of stone; the support of the inhabitants is derived from the mining business, and from strangers visiting the remarkable places in this district; together with the manufacture and sale of various ornamental articles formed from spar, which is hereabout obtained in great variety and beauty: the mine of fluor spar, or "Blue John," is the only one of the kind in England, and its produce is worked into chimney and other ornaments, slabs, table tops, &c. Population of the parish of Castleton, 1329.

CAVALRY. (*a.*) Asia appears to have furnished Europe with the model for cavalry, which, according to Herodotus, received its first formation in the east, from Cyaxares, king of Media. Before his time, footmen and horsemen were promiscuously embodied; but preparatory to the siege of Nineveh, he sorted this motley band and divided each particular force into separate companies. Cyrus the elder is the next conspicuous organizer of cavalry; he appears, however, to have been more struck by the power of plundering, which an army acquired from such a force, than by its utility in the field: for, if Xenophon is to be believed his proposition for the Persians to raise a body of horse was immediately caused by seeing the Medes and Hyrcanian cavalry returning to the camp laden with booty. The Scythians, who possessed Asia for twenty-eight years, fought almost entirely on horseback: like the modern Cossacks, they were particularly successful in irregular warfare, and when Darius invaded their country, never failed to drive back the Persian cavalry. It is remarkable, that even at this early period of tactics, the superiority of infantry over cavalry was strongly evinced. "The Scythians," says Herodotus, "notwithstanding their advantage over the Persian horse, always retreated from the foot." Under Darius, the Persian cavalry progressively increased, and we find them at the battle of Marathon ten thousand strong—a force nearly equal to the whole Athenian army, which consisted exclusively of infantry. Miltiades, however, was well acquainted with the composition of the Persian troops; and knowing that their chief dependence was on this body of cavalry, he prudently attacked them in the narrow plain of Marathon, where they were so impeded by want of space, and so encumbered by their own numerous infantry, that they became unable to act, and were completely defeated by the gallant Greeks. The Persian cavalry were then armed with darts or arrows. Like the eastern cavalry of the present day, they generally attacked and harassed by successive small bodies, rapid in the advance and vehement in the onset, but when firmly resisted, equally rapid in retreat. The Athenian infantry again showed their excellence at Mount Cithaeron, where a small number under Olympiodorus not only sustained but repelled the attacks of the whole cavalry of Mardonius. This cavalry, however, greatly and constantly harassed the Greeks previous to the battle of Plataea; and although in that battle the Persian horse totally failed in their attempts to break the Spartan phalanx, yet the Greeks perceived the advantage of so valuable an accessory, and after that period directed more attention to the improvement of their cavalry. Yet cavalry never formed any considerable portion of the Grecian armies. The Athenians and Spartans, the two most warlike states, were both badly provided with it; indeed, the latter absolutely despised such an assistant. The Thessalians, who inhabited a large plain, appear to have furnished the best horse amongst the Greeks: these, as well as the Eolians and Thracians, are stated to have been always employed by the kings of Macedon; but this force was small in proportion to the infantry, which always constituted the principal strength of the Grecian armies. No Asiatic cavalry would dare to charge the phalanx, and no Asiatic infantry could withstand its attacks. The retreat of the ten thousand was protected by not more than fifty horse; and with the assistance of this small number of indifferent cavalry, principally mounted upon baggage horses, Xenophon brought his army across the mountains and valleys of Asia, harassed by the Persian and barbarian cavalry. During these intestine wars, the Greeks appear to have paid greater attention to the equipment and tactics of cavalry, the principal improvements in which were made by Epaminondas. At the battle of Leuctra, we find that the Theban horse were "carefully appointed, highly trained, and of considerable prowess."

and at Mantinea, both Theban, Thessalian, and Athenian, were severally distinguished, At Arbela, Alexander employed his Grecian cavalry with much success, defeating with them the Scythian and Bactrian horse, and throwing the whole Persian line into confusion; indeed, the Thessalian cavalry are stated to have mainly contributed to the glory of this day. However, generally speaking, the Grecian cavalry did not enjoy much consideration, and the victories of Alexander are more to be attributed to the resisting firmness of the Macedonian phalanx than to the more active bravery of the Thessalian horse. The Grecian cavalry were armed with the helmet, cuirass, shield, lance, and sword, and, after various modifications, were finally formed into troops of eight files and fout ranks. The Romans imitated the Greeks in equipment, but inverted their order of formation, placing their *turmæ*, or troops of cavalry, in four files and eight ranks, thus diminishing the depth and increasing the mobility. The genius of Grecian tactics was *resistance;* that of the Roman, *attack.* The Roman cavaliers, like the modern dragoons, were taught to fight both on foot and on horseback, but in neither situation were they particularly distinguished. Hannibal's comparison of them to "horsemen having their feet and hands tied," is strongly illustrative of their inefficiency; and although the successes of the Carthaginian general may, in a great measure, be attributed to his superiority over his opponents in military skill, and the undisciplined state of the Roman militia in the second Punic war, yet it is evident that the active operations of the Numidian, and the contemptible condition of the Roman cavalry, enabled him more readily to take advantage of those errors which the republican generals so often committed.

The Romans, like the Greeks, placed their principal dependence in battle, upon their infantry; and in proportion as the cavalry was increased, did the glory and successes of the imperial army diminish. The cavalry was augmented under the last of the Cæsars, and the empire tottered. Men, little better than savages, with arms and physical force alone, subdued the most extensive and civilized empire of the universe; notwithstanding the discipline of her armies, and the number of her cavalry. After the subversion of the western empire, and the establishment of the Franks in Gaul, we find the invaders gradually increasing the number of their cavalry. At the battle of Tours, in 732, the French army consisted of sixty thousand foot and twelve thousand horse; and under Charlemagne and the second race of French monarchs, their armies were almost entirely composed of cavalry. These cavaliers carried defensive armour to a great extent; every remnant of mechanical art that survived in the midst of rudeness and barbarity, was employed to protect and arm the man and horse. The defenceless multitude shrunk before the "steel-clad cuirassier," and the feudal system, with all its aristocratical rights, and chivalrous influence, became established:—

> "For men-at-arms were here,
> Heavily sheathed in mail and plate,
> Like iron towers for strength and weight,
> With battle-axe and spear."

Cavalry constituted the principal strength of armies during the middle ages, and the honourable name of *miles* was confined to those only who served on horseback and were invested with the order of knighthood. The service of the infantry was degraded to a miserable and undisciplined populace; a charge of cavalry was irresistible; armies were alone formidable in proportion to the number of men-at-arms which they contained, and the undefended infantry became an easy conquest to their lordly foes.

As the comparative inefficiency of infantry became evident, a greater proportion of cavalry was employed; and armies, though better equipped and disciplined, were less numerous. This was the case in the early part of the fourteenth century, at which period the main exertion of every state was to obtain a predominating number of men-at-arms. These troops underwent various changes both in denomination and equipment. At the beginning of the fourteenth century, the cavalry of the European armies was divided into heavy and light horse; the men composing the former were called *men-at-arms,* those of the latter, *hobilers.* The men-at-arms were so called from their being armed *de cap-a-pied;* they were composed of the tenants *in capite,* (holding by military service,) or their substitutes (*servientes.*) The hobilers were so called from their riding little horses, termed hobbies; they consisted of the yeomen, and formed the light cavalry of the army. At the beginning of the fifteenth century, the men-at-arms were termed launcers, and the hobilers demi-launcers. At the close of the reign of James I., the heavy cavalry received the denomination of cavaliers, from the intercourse with Spain; and soon after that, of pistoliers from the peculiar weapon with which they were armed.

The defensive equipment of the man and horse appears to have progressively increased, until the introduction of plate-armour, in the fifteenth century, denoted its *ne plus ultra.* Now the man-at-arms, cased in entire steel, the several pieces firmly riveted, and proof against every stroke, his charger protected on the head, chest, and shoulder, fought with a security of success that could not be exceeded. The comparatively innocent effect of this excessive precaution is worthy of remark. Machiavelli relates, that at the battle of Zagonara, in 1423, only three persons lost their lives, and those not by the lance, sword, or battle-axe, but, by *suffocation in the mud.* At the battle of Molinella no one was killed. In an action between the Neapolitan and Papal troops, in 1486, not only no one was killed, but it could not be ascertained that any one was wounded. Philip de Comines relates an instance where a number of Italian knights were overthrown, but could not be slain until broke up, like huge lobsters, by the servants and followers of the army, each knight requiring three or four men, and as many woodcutter's axes, to despatch him. In fact, the art of defence had outstripped that of destruction; and, although in a charge many were unhorsed by the shock, yet the lance's point could not penetrate the breast-plate, the sword fell harmless upon the back-plate, the battle-axe was in vain uplifted against the helmet; and the conqueror, in the first impulse of his rage, was unable to reach any vital part of his prostrate enemy.

St Palaye attributes the decline of chivalry in France to the profusion with which the knightly order was lavished under Charles VI., the extension of the honour to lawyers and others of civil occupations, by Francis I., and the establishment of the *compagnies d'ordonnance,* in 1445, by Charles VII. The latter circumstance had, no doubt, important influence; it led to the formation of standing armies, and the employment of mercenary troops; but the death-blow of chivalry was the invention of gunpowder: that event, and the general employment of fire-arms, by which it was progressively followed, form the important frontier of the ancient and modern art of war. The weapons of former warfare gradually lost their efficacy; physical force was reduced to a very subordinate place in the accomplishments of a soldier, and the coat of mail was no longer a security.

The *compagnies d'ordonnance* of Charles VII. consisted of nine thousand heavy, and seven thousand five hundred light cavalry. These troops may be considered as the foundation of regular cavalry, and, indeed, the first national standing army, except body-guards, which had been raised in any part of Europe. The heavy cavalry still preserved the costume of the men-at-arms; but a considerable change took place in the light cavalry, who appeared under the different denominations of arquebusiers, hussars, carabines, light-horse, &c. The arquebusiers were so called from the hargobus or arquebus, a sort of short musket with which they were armed; the hussars from the Hungarian word *husz* (*i. e.*, *twenty*) being raised in Hungary by an ordinance which required every *twentieth* man to take the field; the carabines, or carbineers, were something similar to the arquebusiers, and were attached to the regiments of light cavalry, in order to act as skirmishers. Of all the European cavalry, the *reiters* of the empire appear to have been the most distinguished. In the civil wars of France, and in the army of prince Maurice of Orange, these horsemen always constituted the principal and most efficient body of cavalry, and by means of their long pistols and dense formation carried destruction into the single ranks of the French and Spanish lancers. The employment of carbineers and arquebusiers, who sometimes fought on foot, and were frequently obliged to carry infantry behind them, led, at a later period, to the establishment of dragoons.

After the decline of chivalry, and the abandonment of defensive arms, the service of the infantry rose in estimation. The first organised body of foot, which proceeded from the feudal armies, was probably formed out of that monstrous multitude, which passed from Europe into Asia, in the train of the crusaders; but it was the Swiss patriots who restored the infantry to that place which it had held in the armies of Greece and Rome. The poverty of these simple peasants, and the small number of gentlemen residing in their barren and uncultivated country, rendered them unable to bring into the field any body of horse capable of resisting the heavy-armed cavalry of the Austrians, and they were, therefore, compelled to rest their whole dependence upon their infantry. The intrepidity and devotion of these troops rivalled that of the heroes of Lacedæmon. Instinctively adopting the principle of the Grecian phalanx, they formed themselves into dense battalions, presenting on every side so formidable a front of pikes, as to be perfectly impenetrable to the attacks of the Austrian cavaliers, who, after repeated efforts to overcome these martial peasants, thought it prudent to discontinue their attacks, and give up all attempts upon the liberties of the Swiss.* The Burgundian gendarmerie were equally unsuccessful as the Austrian; and the invincible Swiss infantry became so celebrated, that they were everywhere sought for, and employed. Their mutinous and insolent conduct, however, when acting as mercenaries, induced other states to form infantry for themselves, and the Spaniards very soon excelled their far-famed opponents. The Spanish infantry rendered their battalions much more formidable than those of the Swiss, by mixing fire-arms with their pikes; and, although sometimes broken by the lansquenets or German infantry, they were never thrown into disorder, but always returned individually to the charge. The reputation of the Spaniards lasted until the battle of Rocroi, when the decline of the monarchy brought on also that of their infantry, and the French infantry took the lead in Europe. Meantime, Gustavus Adolphus introduced a new system of tactics; the application of both infantry and cavalry became better understood; and the utility of amalgamating both arms appeared evident. By intermixing platoons of infantry with squadrons of cavalry, Gustavus was enabled to withstand the formidable Austrian cuirassiers at the battle of Leipsic; and the same practice was followed by Weimar and all the generals of the Swedish school.

From Gustavus Adolphus to Frederick the Great there was no inventor in the art of war: Louis XIV. certainly established *grenadiers à cheval* and James II. horse-grenadiers. Charles XII. once rode two horses to death at a cavalry review, and some swarms of Turks appeared in Hungary; but no change occurred that is worth recording in either the tactics or organization of cavalry. Frederick, however, infused new life into the whole military system. He increased the cuirassier's trot into a gallop, changed their heavy armour into a simple breastplate, reduced their formation to two deep, and, with the assistance of the great Seidlitz, brought the Prussian cavalry to a degree of perfection which they had never before attained. Since the time of Frederick, the tactics of cavalry have undergone little change; but in the arming of that force, two remarkable innovations have been introduced in the revival of the cuirass and lance.

The lance is not yet properly estimated in the British service. An imperfect knowledge of its capabilities, and an ill-founded prejudice against its use, have conspired to render the lance absolutely unpopular with our tacticians; and, perhaps, if a majority of opinions was now taken on the subject, it would be decreed, that a regiment of lancers was more ornamental than useful. The history, however, of all ages shows, that the lance is the most formidable and the most effective weapon that cavalry can be armed with. It was the distinguishing weapon of the days of chivalry; it was the principal arm of that cavalry whom nothing but the Swiss infantry could resist; and, in modern times, it has been most successfully employed in the French armies. The misapplication of the lance in our service is a sufficient proof of how little it is understood. That weapon is peculiarly adapted for *heavy cavalry*, and in the hands of light dragoons, upon light horses, is deprived of half its advantages. If the useless carbine, with its weighty appendages, was taken from our heavy cavalry, and a twelve-foot lance substituted, those troops would become, perhaps, the most formidable *line cavalry* in Europe. Both the *personnel* and *matériel* of the British cavalry qualify it in the highest degree for this description of force. The size, strength, and swiftness of the horse,—the weight, steadiness, and moral force of the man,—are qualities which should not be deprived of the means that would render them most effective.

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* The example of Wallace and Bruce, in their defence of Scotland against the splendid chivalry of the Plantagenets, had probably little influence on the continent; but in the history of those wars a complete and perfect parallel to that of Switzerland at this period is to be found. The old monkish rhyme, commonly called "The Bruce's Testament," may amuse the reader.

"Scotica sit guerra *Pedites*, mons, mossica terra.
Silvae pro muris sint, arcus et hasta, secures.
Per loca stricta greges munientur: plana per ignem
Sic inflammentur, ut ab hostibus evacuentur.
Insidiæ vigiles sint, noctu vociferantes.
Sic male turbati redient velut ense fugati
Hostes pro certo—sic Rege docente Roberto."

A capital code, of which the following, the old Scottish version, is meritorious;

"On fut suld be all Scottis weire
Be hyll and moss themself to weire.
Let wood for wallis be; bow and speir
And battle-axe their fechting geir.
That enemies do thaim na dreire
In strait places gar keip all stoire
And birnen the plane land thaim before
Than sall they pass away in haist
Quhen that they find naithing but waist
With wylles and awakenen of the nycht
And meikle noyse made on hyrht;
Than sall they turnen with gret affrai
As they were chasit with swerd away,—
This is the counsell and intent
Of gud king Robert's Testament."

See Tytler's History of Scotland (vol. i., p. 63), a work in which the ancient military history of that country is, for the first time, handled with skill and effect.

Armour of any kind is highly objectionable for any cavalry. It is strange that armour should have been given to the British Life Guards immediately after they had proved its inefficiency,—after they, unaided by such defences, had torn the laurels of Waterloo from the cuirassiers of France. Armour must be a decided impediment to the efficiency of a dragoon on service. The enormous weight,—the constant clearing required,—the pain which its inflexibility must cause under fatigue, are circumstances which alone qualify its advantages in action. These advantages also have been much overrated; and perhaps it will one day be shown that the British Life Guards are more to be feared when their natural strength, weight, and activity are allowed full freedom of action, than when such qualities are constrained by the incumbrance of a cuirass. King James I. observed, in praise of armour, that it not *only* protected the wearer, but also prevented him from injuring any other person; and there can be no doubt that, however invulnerable a cuirass may render a cavalry soldier, his *active* properties are thereby much reduced.

It is strange, that eager as we are to avail ourselves of foreign fashions in our uniforms and equipments, we so often miss the point of utility. The hussar cap, for example, is, according to the real Hungarian form, an useful thing; the long triangular flap, which hangs down like a jelly-bag, consists of a double slip of cloth, which will fold round the soldier's face, and form a comfortable night-cap; but, in our service, one single slip is left to flap and dangle about the man's head, no great ornament by day, and totally useless by night. The hussar pelisse also, in its original form, was intended for a rational outside covering, but with us it is a mere appendage to the soldier's neck, which, on such occasions, seems but to perform the service of a clothes-peg. The British cavalry are certainly better provided both with *personnel* and *matériel* than any cavalry in Europe, perhaps than any cavalry in the world; but they are deficient in mobility,—not in direct movement,—for our horses have, probably, greater speed than any foreign cavalry,—but in that facility of manœuvre which enables large masses of cavalry to appear suddenly on that point in the field of battle where their assistance is required. It is in this locomotive property that the German cavalry so much excel us; they are also better officered, more watchful, more accustomed to act independently, and, therefore, better adapted for those peculiar operations of cavalry which come under the head of field service, or outpost duty. The leading quality of an English soldier, whether horse or foot, is *resistance*, the second is *direct attack*, and the operations of a skirmisher, or hussar, are entirely foreign to his natural propensities.

CHALK FORMATION. Chalk forms the last of the series commonly ranked in the secondary strata, and rests upon the greensand beds, which consist of a loose silicious sand, mixed with green earth and silicious concretions, hornstone, and flint. Sometimes, however, chalk is found resting on the bias, red marl or some of the older secondary rocks. It extends over the south-eastern, and eastern counties of England, north of France, Germany, and north of Europe. It occurs in the north of Ireland, and a slight trace of it has been discovered in the north of Scotland. It is stratified, and varies from a thousand to a few feet in depth. Chalk is almost a pure carbonate of lime. It is in general soft and friable; although sometimes so hard as to be used as a building stone. Portions of chalk found in contact with the igneous rocks of the Giants' Causeway in Ireland, have been so acted on by heat, as to assume the form of marble. Numerous flint nodules are found in chalk, and these generally contain some organized substance, as a shell animal, or piece of flustra, as their nucleus. Their nodules are more numerous in the upper than in the lower beds. The organic remains found in chalk are numerous, and almost exclusively marine. The spatangus, and echinus, or sea urchin, are very common. Among the chambered shells are scaphites, hamites, turrilites, baculites; ammonites, belemnites, nautilites, zoophytes, spinges, and bivalve shells are also numerous. Spiral univalves are more rare. Marine fuci, and fossil wood, which has evidently been much drifted, are not uncommon. Chalk contains occasionally an admixture of magnesia, which imparts to it a brown spotted appearance. On the whole, the chalk beds appear to have been formed at the bottom of an ocean, probably by the disintegration of calcareous rocks, to a fine sand or powder, aided also by numerous minute crustacea and animalculæ, whose slender forms have recently been discovered in myriads in deposits of chalk, both marine and lacustrine. Chalk may also have owed its origin to a sudden precipitation from some chemical solution.

CHALMERS, ALEXANDER, M. A., F. S. A., a very voluminous writer and compiler for the London booksellers, was born at Aberdeen, March 29, 1759, and was the youngest son of James Chalmers and Susanna Trail, daughter of the Rev. James Trail, minister at Montrose. His father was a printer at Aberdeen, who established the first newspaper known at Aberdeen; which, after his death in September, 1764, was carried on by his eldest son, and is now the property of his grandson, Mr David Chalmers. His grandfather, the Rev. James Chalmers, professor of divinity in the Marischal college, died, much regretted, October the 8th, 1744, aged fifty-eight. Having received a classical and medical education, about the year 1777 he left his native city, and, what is remarkable, he never returned to it. He had obtained the situation of surgeon in the West Indies, and had arrived at Portsmouth to join his ship, when he suddenly altered his mind, and proceeded to the metropolis. He soon became connected with the periodical press. His literary career commenced as editor of the Public Ledger and London Packet. This was during the American war, when party spirit ran very high. At this period Mr Chalmers acquired considerable fame as a political writer. He also contributed to the other popular journals of the day. In the St James's Chronicle he wrote numerous essays, many of them under the signature of Senex. To the Morning Chronicle, the property of his friend, Mr Perry, he was for some years a valuable assistant. His contributions consisted of smart paragraphs, epigrams, and satirical poems. He was also at one time editor of the Morning Herald. Mr Chalmers was early connected in business with Mr George Robinson, the celebrated publisher, in Paternoster Row. He assisted him in judging of MSS. offered for publication, as well as occasionally fitting the same for the public eye. He was also a contributor to the Critical Review, then published by Mr Robinson, and to the Analytical Review, published by Mr Johnson. At this period he lived almost wholly with Mr Robinson; and, on his death, Mr Chalmers recorded his friendship for him by a memoir in the Gentleman's Magazine for June, 1801.

In 1793, he published a continuation of the History of England, in letters, 2 vols.;—2d edition, 1798; 3d edition, 1803; 4th edition, 1821. In 1797 he compiled a Glossary to Shakspeare; in 1798 a sketch of the isle of Wight; and published an edition of the Rev. James Barclay's complete and universal English Dictionary. In 1803 he edited "The British Essayists, with prefaces historical and biographical, and a General Index," 45 vols. This series begins with the Tatler, and ends with the Observer. The papers were collated with the original editions; and the prefaces give accounts of the works, and of the lives of such of the writers as are less generally known. Another edition of this work was called for in 1808; and it has since been reprinted. In 1803 he prepared an edition of Shakspeare, in 9 vols. 8vo., with an abridgement of the more copious notes of Steevens, and a life of Shakspeare. This edition was accompanied by plates from designs by H. Fuseli, Esq., R.A. Mr Chalmers took particular pains with the *text*, which is believed to be the most correct of any edition yet published: reprinted in 1812. In 1805 he wrote a Life of Burns, and a Life of Dr Beattie, prefixed to their respective works. In the same year he was elected a Fellow of the Society of Antiquaries. In 1806 he edited Fielding's works, 10 vols. 8vo.; Dr Johnson's works, 12 vols. 8vo.; Warton's Essays; the Tatler, Spectator, and Guardian, 14 vols. 8vo.; and assisted the Rev. W. Lisle Bowles in the publication of Pope's Works, 10 vols. 8vo. 1807. In 1807 he edited Gibbon's History, with a Life of the author, 12 vols. 8vo. In 1808, and following years, he prefixed prefaces to the greater part of the volumes of a collection, selected by himself, known as "Walker's Classics," from the name of their publisher. They consisted of 45 vols., and met with great encouragement. In 1809 he edited Bolingbroke's Works, 8 vols. 8vo.; and in this and subsequent years he contributed many of the lives to the magnificent volumes of the "British Gallery of contemporary Portraits," published by Cadell and Davies. These notices, though short, are authentic and valuable. In 1810 he revised an enlarged edition of "The Works of the English poets from Chaucer to Cowper, including the series edited, with prefaces, biographical and critical, by Dr Johnson, and the most approved translations. The additional Lives by Mr Chalmers." In 21 vols. royal 8vo. In the same year he published "A History of the Colleges, Halls, and Public Buildings attached to the University of Oxford, including the Lives of the Founders;" a work which he undertook at the request of his old friend Mr Cooke, the bookseller at Oxford, and from which he derived much pleasure. In 1811 he revised through the press bishop Hurd's edition of Addison's Works, 6 vols. 8vo., and an edition of Pope's Works in 8 vols. 18mo. In the same year he republished, with corrections and alterations, a periodical paper entitled "The Projector," 3 vols. 8vo. These essays were originally printed in the Gentleman's Magazine. They began in January, 1802, and were continued monthly to November, 1809. He had previously written a periodical paper, called "The Trifler," in the Aberdeen Magazine; but those essays were never printed separately. In 1812 he prefixed a life of Alexander Cruden to the sixth edition of his "Concordance."

But the work on which Mr Chalmers's fame as an author chiefly rests is "The General Biographical Dictionary." The first four volumes of the work were published monthly, commencing in May, 1812, and then a volume every alternate month, to the 32d and last volume in March, 1817, a period of four years and ten months of incessant labour and of many personal privations. Fortunately his health and spirits were wonderfully supported, and he was cheered during the progress of the work by the approbation of those whom it is desirable to please. Of the extent of Mr Chalmers's labours some idea may be collected from the following statement. The preceding edition of this Dictionary, 1798, was in 15 vols.; the present in 32 vols. It was augmented by 3934 additional lives, and of the remaining number 2176 were re-written, and the whole revised and corrected. The total number of articles exceed 9000. The genuine fidelity of Mr Chalmers's labours stands conspicuous and unimpeached; in each article the sources whence it is derived are pointed out; the quoted authors are enumerated; and in proportioning the length of an article to the quality and [illegible] of the subject, due consistency is observed.

In November, 1816, he republished "The Lives of Dr Edward Pocock, the celebrated orientalist, by Dr Twells, of Dr Zachary Pearce, bishop of Rochester, and of Dr Thomas Newton, bishop of Bristol, by themselves; and of the Rev. Philip Skelton, by Mr Burdy," in 2 vols. 8vo. In [illegible] he published "County Biography," 4 [illegible], and a life of Dr Paley, prefixed to his works. In 1820, he published "A Dictionary of the English language, abridged from the Rev. H. J. Todd's enlarged edition of Dr Johnson's Dictionary," 1 vol. 8vo. In 1822, he edited the ninth edition of Boswell's "Life of Johnson;" in 1823 a new edition of Shakspeare, and another edition of Dr Johnson's works.

Mr Chalmers was a valuable contributor to the Gentleman's Magazine, to which he was very partial, finding it of the greatest use in the compilation of his biographical works. With the late Mr John Nichols he was in the strictest bonds of friendship, rendered doubly pleasing by the [illegible] larity of their literary pursuits. This friendship continued unabated till the death of Mr Nichols, when Mr Chalmers wrote a biography of him for the Gentleman's Magazine, December, 1826, which is one of the fullest and most pleasing memoirs which ever appeared of a long and laborious literary life. With most of the other principal printers and booksellers of London during the last fifty years, Mr Chalmers lived on terms of intimacy; and has frequently recorded his esteem for them in the obituary of the Gentleman's Magazine.

Mr Chalmers suffered much from illness during the last few years of his life. His death took place in Throgmorton Street, on the 10th of December, 1834. He was a warm and affectionate friend, and a delightful companion, being very convivial, and his conversation replete with both wit and information. He belonged to various literary clubs of the old school, of which he was nearly the last surviving member.

In 1783, Mr Chalmers married Elizabeth, the widow of Mr John Gillett. She died in June, 1816.

CHAMELEON MINERAL; a name given by the chemists of the 18th century to a mass produced by fusing oxide of manganese with nitre or with potash. It is of a dark green colour, and is soluble in water. The solution, at first green, soon passes through bottle green and purple to a deep red; and the red liquid may be again rendered green by the addition of caustic alcalies. These remarkable changes of colour have been shown to depend on the production of two acids, the manganesic and permanganesic; the former, which, with its salts, is green, being composed of manganese one atom, oxygen three atoms; and passing readily with separation of binoxide of manganese, into the latter, which is composed of manganese two atoms, oxygen seven atoms. The permanganesiate of potash may easily be obtained in permanent crystals of a bronze colour and metallic lustre, which give to water a splendid purplish red colour. This salt readily yields oxygen to organic substances, and has lately been used on this account in organic analysis.

CHAMIER, John, was born in London, about the year 1754, and placed at the Charter House on the foundation, at the age of ten years, having received a nomination from queen Charlotte, who had distinguished Mr Chamier's father, the Rev. John Des Champs (de Marsilly), with her particular favour from the earliest period of his quitting *her* native country, Mecklenburg, and settling in England. This worthy divine deserves, indeed, more than a passing notice. He commenced his career at Berlin, as chaplain to the queen of Prussia, and tutor to prince Henry, brother of the great Frederick, who by his harsh and unprincipled conduct, and by the sanction which he openly gave to infidel doctrines, drove him from the court. On his arrival in Great Britain, where his fame as a preacher had preceded him, he was immediately appointed minister of the Savoy chapel in the Strand, and afterwards presented to the living of [illegible], Dorset. His works, which are very numerous, were written entirely in the French language, and consist chiefly of Sermons, "Abrégé de la Religion Chrétienne," and "Cours de la Philosophie Wolfienne."

At the age of sixteen, Mr Chamier, instead of proceeding to the university, accepted a writership in India. There, from the year 1772 to 1805, he was employed in the civil service of the Company at Madras, and filled most of the principal situations in the political, revenue, and commercial branches, until at last he was appointed a member of the council at that presidency.

On his return to England, he settled in the parish of St George, Hanover Square, actively supported several of the public metropolitan institutions, became treasurer of St George's hospital, and served the office of church-warden with Lord Amherst in the year 1819. Mr Chamier retired early from the world, and confined himself for many years to the tranquil enjoyments afforded by a well-selected library, and a domestic circle devoted to his comfort and happiness. Mr Chamier never courted literary reputation; but he was tempted, at the solicitation of some scientific friends, to publish a Meteorological Journal about the year 1787, in one volume 4to, which has become exceedingly scarce. His epistolary style was a model of perfection—easy, elegant, and playfully satirical.

About 1781, he took, by royal licence and authority, the name and armorial bearings of his maternal uncle, Anthony Chamier, Esq. F. R. S., representative in several parliaments of the borough of Tamworth, and under secretary of state, who, dying in the year 1780 without children, left him sole heir of his property and estates. Mr Anthony Chamier was well known in the literary and fashionable circles of his day, and was one of the original members of Johnson's Literary Club. He lived on terms of intimacy with the great moralist; is often mentioned in Boswell's Life; and numbered amongst his friends Reynolds, Burke, Langton, Topham, Beauclerk, and Goldsmith.

Mr Chamier married Georgiana Grace, eldest daughter of Adm. Sir William Burnaby, Bart., and by her, who died May 14, 1826, left issue four sons and four daughters. He died at London, Feb. 23, 1831.

CHAPEL-EN-LE-FRITH; a market-town in Derbyshire, 167 miles, N. W. from London, and twenty S. E. from Manchester. Its name signifies the "Chapel in the Forest," from the Saxon word *frith*, a forest or wood—the church or chapel, which originated the town, having been built within the forest of the High Peak. The town is neat, and pleasantly situated on the declivity of a hill, rising from an extensive and fertile vale, surrounded by lofty eminences that bound this extremity of the county. The manufacture of cotton is the principal branch of business here. There is an establishment for warehousing goods, this place being a medium of communication between the large manufacturing towns of Manchester and Sheffield. Lead and coal mines, and lime-stone quarries, are worked in the neighbourhood; from the latter a railway communicates with the Peak Forest canal, which passes about three miles to the north-west. A large reservoir in the parish supplies the canal; it is a fine sheet of water, much frequented by anglers. Population in 1831, 3220.

CHARD; a town of Somersetshire, 140 miles W. S. W. from London. It is situated at the southern extremity of the county, on the highest ground between the north and south seas, a stream of water in the streets being divertible at pleasure into the English or the Bristol channel. The town consists chiefly of two streets, and a long row of houses called Crow Lane. It was constituted a borough in the reign of Edward I., and sent its representatives regularly to parliament till the 2nd of Edward III., when the privilege was withdrawn, and has not since been restored. Chard was the scene of battle between the partizans of Charles I. under Colonel Penruddock, and the parliamentarians, in which the former sustained a signal defeat. On Brown Down, in the neighbourhood of Chard, are several barrows, called Robin Hood's butts, which the vulgar maintain marked the distance to which Robin Hood and Little John were accustomed to throw their quoits. Population in 1831, 5141.

CHARLEVILLE, RIGHT HON. CHARLES WILLIAM BURY, Earl of, was born June 30, 1764, the only child of John Bury, Esq., by Catharine, second daughter and co-heiress of Francis Sadlier, of Sopwell Hall, county Tipperary, Esq. He was advanced to the dignity of viscount Charleville by patent dated Dec. 29, 1800. He was elected one of the twenty-eight representative peers for Ireland on the first vacancy that occurred after the Union, by the death of Lord Rossmore in Aug. 1801; and was advanced to the earldom of Charleville by patent dated Feb. 16, 1806. During the rebellion in Ireland in 1799, his Lordship took an active part in its suppression. He commanded the Tullamore troop of cavalry, and two companies of infantry. His beautiful seat at Charleville Forest, King's county, was consumed by fire in 1808; and he afterwards erected a spacious mansion, in the castellated style, from the designs of Francis Johnston, Esq. The surrounding plantations are remarkably fine, and an artificial lake has been formed with the waters of the river Clodah. His Lordship was a classical scholar and an elegant writer, and wrote many learned papers on various subjects. He was held in high estimation among the literary and scientific men of Dublin, and for some years was president of the Royal Irish Academy. He was eminently distinguished for his high honour and unflinching integrity; and following the example of his ancestors for many generations, was a staunch supporter of the Protestant cause. In social life he was sincerely beloved. He died at Dover, Oct. 31, 1835.

The earl of Charleville married, June 4, 1798, Catharine Maria, only daughter and heiress of Thomas Townley Dawson, Esq., and widow of James Tisdall, Esq., and by her ladyship, he had his only son and heir—Charles William, now earl of Charleville.

CHATHAM, in Kent. (*a*.) Chatham appears to have derived its name from the Saxon words *cyte*, a cottage, and *ham*, a town or village. It is situated on the south-east bank of the Medway, on the north side of Chatham hill, thirty miles S. E. from London. It adjoins the city of Rochester, and with Stroud, on the opposite side of the bridge, over the Medway, forms one continuous street, of upwards of two miles in length, locally called the "Three Towns." There was an extensive Roman station here: large quantities of remains, and many Roman graves, were discovered in excavating for the lines. The excellent fund, originally called the *Chest at Chatham*, (since removed to Greenwich and London,) was commenced by the advice of Sir Francis Drake and Sir John Hawkins, after the defeat of the Spanish armada in 1588, when queen Elizabeth assigned a small portion of the pay of every seaman, for the relief of those who had been wounded or disabled in the royal navy. An hospital was erected here for ten "poor decayed seamen and ship-wrights," by Sir John Hawkins, under royal charter, in 1592. There is also another hospital, capable of containing 400 patients, at Chatham; this structure is 350 feet in length, and was erected at a cost of £70,000. The population of the parishes of Chatham and Gillingham, according to the last census, amounted to [illegible]

During the war with France, in 1756, when the country was threatened with an invasion, the extensive fortifications called the *lines* were commenced, principally with a view to defend the dock-yard. The lines are strengthened by ramparts, palisadoes, and a broad deep ditch, and are further defended by a strong redoubt on the summit of the hill, towards the south-east. They embrace within their circumference, which extends for several miles, the whole of the naval establishments, the upper and lower barracks, the populous village of Brompton, and Chatham church. The barracks are very extensive; as independently of a large resident garrison of marines, this is one of the principal depots for troops destined for foreign service.

A dock-yard was commenced here early in the reign of Elizabeth, near the place where the gun wharf is now situated. It appears then to have consisted of one small dock, which, from its confined situation, and the increasing magnitude of the navy, it was found necessary, in the year 1622, to remove to the site of the present establishment. During the reign of Elizabeth, the fleet usually lay in the river Medway, and the queen seems to have fully appreciated the advantages of the situation, by ordering the erection of Upnor Castle, a fortification a little below the dock-yard, on the opposite bank of the river. Within the mouldering towers of this structure, (which is surrounded by a moat,) a magazine of gunpowder is kept for the use of the navy; but no guns have been mounted for its defence, for a considerable period. Upnor Castle has a small establishment under the command of a governor, who also commands the other forts for the defence of the Medway.

The arsenal was constructed at the conclusion of the first war with Holland, in the reign of Charles II., who also greatly improved and extended the dock-yard.

Chatham dock-yard is situated on the eastern bank of the river, immediately below Chatham, and, including the ordnance wharf, is about a mile in length. It is intersected with streets of store-houses and other buildings.

Amongst the objects most deserving of notice at Chatham dock-yard are the *Smitheries*, containing upwards of twenty forges, many of which are adapted for the construction of anchors of the largest size, which weigh five tons, are moved into and out of the fire by means of cranes, and are of the value of £360;—the *Rope-house*, 11[illegible] feet in length, in which cables of 120 fathoms, and twenty-five inches in circumference, are made;—large *Store-house*, 220 yards long, and the *Sail-loft*, [illegible] feet. There are six slips for building ships, and four docks for their repair; an ordnance-wharf, on which the guns belonging to the various ships lying in ordinary, are systematically arranged in immense tiers, the cannon-balls being arranged in pyramids; various cranes, of great power; kilns, in which the planks necessary for curved forms, are steamed; pump-houses, saw-pits, and extensive ranges of artificers' work-shops; an anchor-wharf; a mast-house, 220 feet long, and 120 wide, for [illegible] ing up masts and yards of the largest dimensions: several ponds, where the timbers to form the masts are kept constantly floating; spacious and handsome residences for the commissioner and principal officers in the yard; in short, every requisite and convenience for the purposes of so vast an establishment. But, notwithstanding the multiplicity of movements and processes continually going on, and the number of persons employed, there is no appearance of bustle or disorder; indeed, such is the state of discipline and perfection by which every thing is conducted, that it may be regarded as a sort of rational machine, worked by instinctive power, and set in motion by superior minds;—every man, every object, and each operation, seem tributary to that great floating citadel, and ever-changing home, a man-of-war.

The rapidity with which a ship can be fitted out in cases of emergency, is a striking illustration of this. Even early in the last century, a first-rate of 106 guns, which was ordered to be commissioned with great expedition for Sir Cloudesley Shovel, was completely fitted out in three days; she had previously been entirely unrigged, but her masts were raised, yards to, sails bent, and anchors and cables on board, at the conclusion of that short period, when she was enabled to drop down the Medway. Great as the celerity in this instance appears, the same equipment could now be effected in one-third less time. During the last war, nearly 4000 persons were employed in this dock-yard.

CHEADLE; a parish in the county-palatine of Chester. The township of Cheadle-Bulkeley, in this parish, is six miles from Manchester and three from Stockport. In the neighbourhood are several print works and bleaching-grounds. Population of parish in 1831, 8154.

CHEADLE; a market-town and parish in the county of Stafford. Tape is the principal article manufactured in the town; near it are extensive manufactories of brass wire. Population in 1831, 4119.

CHELMSFORD, the county-town of Essex, is situated near the centre of the county, twenty-nine miles E. N. E. from London, at the confluence of the Cam and Chelmer, from the old ford at which latter river it derives its name. At present the town consists of four principal streets, all well paved and lighted with gas. The houses are in general modern, and many of them have gardens behind them extending to the river. A beautiful iron-bridge was recently thrown over the Chelmer, and an elegant stone bridge of one arch over the Cam some time ago replaced that erected by Bishop Maurice, in the reign of Henry I. It is by this bridge that the populous hamlet of Moulsham is joined to the town. Near the centre of the town stands the shire-hall, an elegant and commodious structure. The old county gaol, finished in 1777 at an expense of £18,000, stands in the hamlet of Moulsham. This possesses suitable apartments for the classification of prisoners, an infirmary for the sick, and a chapel. The old house of correction was incorporated with the gaol, an a new house of correction was erected at Springfield-hill, at an expense of nearly £56,000. It is capable of accommodating 254 prisoners, of whom 218 may be confined in separate cells. There are several large corn-mills on the Chelmer, the principal trade of the place being in corn, which is sent to the London market. It possesses also an extensive traffic of a miscellaneous nature, arising from its situation as a great thoroughfare. It has a navigable canal to the Black-water river—a distance of twelve miles—which has contributed greatly to its prosperity. The market is held on Friday, and it has fairs on May 12th, and November 12th. There is a very neat and commodious theatre, which is opened occasionally; assemblies and concerts take place periodically in the shire-hall; and horse-races, which continue for three days, are held in the latter end of July. Population in 1831, 5435.

CHEPSTOW; a sea-port town in Monmouthshire, 136 miles W. from London. It is finely situated on the slope of a hill among the lofty cliffs that rise abruptly from the western bank of the Wye near its confluence with the Severn. It is neatly built, the streets broad, well paved, and lighted with gas. There are no manufactures carried on here, but the foreign trade is considerable. Wines are imported from Oporto, and deals, hemp, flax, and pitch, from Norway and Russia. It is the port of all the towns on the rivers Wye and Lug, and supplies Herefordshire and the eastern part of Monmouthshire with all the necessary imports. It exports bark, iron, cider, coal, and millstones. It sends a quantity of timber to Plymouth, Portsmouth, and Deptford; and the Bristol market depends upon it in a great measure for its supply of grain. Ship-building is carried on to a considerable extent, for which there are convenient docks on the banks of the Wye. The tide runs up the river with wonderful rapidity, and rises frequently to the height of fifty or sixty feet. It has even been known to rise as high as seventy feet. Population in 1831, 3524.

Chepstow Castle, the ruins of which still remain, is built on the brow of a precipice, which rises boldly from the Wye, one side being advanced close to the edge, and constructed in such a manner as to appear a part of the cliff itself; the same ivy which overspreads the walls, twines and clusters round the high fragments, and down the perpendicular side of the rock. The other parts of the castle were defended by a moat, and consist of massive walls, flanked with lofty towers. The area occupies a large tract of ground, and is divided into four courts. The grand entrance to the east is a circular arch between two round towers. The first court into which it leads, contains the shells of the great hall, kitchens, and numerous apartments of considerable size, retaining vestiges of baronial splendour. Some Roman bricks which have been found in different parts of the ruin, have suggested that a portion at least of the castle was of Roman workmanship; but evidently the work was of Norman origin; the shell appears to have been built on one plan, and at the same time; but alterations and additions were made by successive proprietors.

Through the civil wars, this castle was considered of great importance by both contending parties. It was at first garrisoned for the king, but was surrendered to the parliament forces under the command of Colonel Morgan. Afterwards, the royalists, under Sir Nicholas Kemys, took it by surprise, and made the garrison prisoners of war. So much was the possession of this place valued, that Cromwell marched against it then in person; but after making himself master of the town, assaulted the castle without success. He then left Colonel Ewer to prosecute the siege. But the garrison defended themselves valiantly, until their provisions were exhausted, and even then refused to surrender, though under promise of quarter, hoping to escape by means of a boat, which they had provided for that purpose. A soldier of the parliament army, however, swam across the river with a knife between his teeth, cut the cable of the boat, and brought it away. The castle was at length forced, and Sir Nicholas Kemys, with forty men, slain in the assault. This event was considered by the parliament so important, that the captain who brought the news was rewarded with £50, and a letter of thanks was sent to Colonel Ewer and the officers and soldiers engaged in that service. In 1645, the castle and park of Chepstow, together with the chase of Wentwood, and several estates which belonged to the marquis of Worcester, and other loyalists, to the amount then of £2500 a year, were settled on Oliver Cromwell. At the restoration of Charles II., the castle, &c., were restored to the marquis of Worcester, and has since continued in the possession of his descendants. The duke of Beaufort is present proprietor. One of the most interesting parts of the castle is *Marten's tower*, or the tower where Harry Marten, the regicide, was long imprisoned.

CHERT is a rock compound of silicious particles, mixed with limestone in such a way as to indicate that its formation has been partly owing to chemical solution of the flinty matter and partly mechanical solution of the lime.

CHERTSEY; a market-town in the county of Surrey, situated on the banks of the Thames, over which there is here a bridge of seven arches; nineteen miles W. S. W. from London. The principal articles of commerce here are flour, malt, iron-hoops, and brooms. Population in 1831, 4795.

St Anne's Well, in the parish of Chertsey, was formerly in great repute for curing diseases of the eyes, and St Anne's hill, one of the most delightful situations within its boundaries, was the residence of the celebrated C. J. Fox, in the latter years of his life. In the Porch House, at Chertsey, also, did Cowley close his days. Day, the author of Sandford and Merton, lived in this vicinity.

CHESTERFIELD; a parish and market-town in Derbyshire; the latter, twenty-five miles N. E. from Derby, is of more trading importance than any in the county. At the time of the Norman survey it was called *Cestrefield*, and was then merely a bailiwick to Newbold—the latter now but a small hamlet in the parish; subsequently it advanced to considerable importance, and king John conferred upon it a charter of incorporation, with the privilege of two markets and a fair: this charter was ratified by succeeding sovereigns, enlarged by queen Elizabeth, and confirmed by Charles II. The new municipal act (passed in 1835,) vested the government of the town in a mayor, four aldermen and twelve councillors. The town occupies a considerable extent of ground, and is irregularly built. It has extensive manufactories of cotton, silk, carpets, gloves, hosiery, &c. The neighbourhood abounds with coal, iron-stone, and lead-ore, all of which are successfully wrought. There are several iron-foundries in the parish, where all kinds of machinery are made; and lead is sent in great quantities from Chesterfield, by the canal that runs from that place into the Trent, a little below Gainsborough. There are also potteries in this parish, chiefly employed in making coarse brown ware, at which some hundreds of people are employed. Chesterfield gives the title of earl to a branch of the Stanhope family. Population of parish in 1831, 5775.

CHICHESTER; a city and county in itself, locally situated in the hundred of Box and Stockbridge, and rape of Chichester, county of Sussex, lying on a gentle eminence, surrounded on all sides, except the north, by the small river Lavant. It boasts of great antiquity, and is deemed by Horsley to be the Regnum of the Romans. After being destroyed by Ella in the fifth century, it was rebuilt by his son Cissa, who called it Cissa Cester after himself, and made it the capital of the kingdom of the South Saxons. It subsequently suffered much from the Danes, but was benefited after the conquest by the removal to it of the episcopal see from Selsea. Since that period the siege which it sustained under Charles I. seems the only historical fact worthy notice. This town was originally strongly walled, having four gates fronting the cardinal points of the compass, and from these gates four principal streets, named after their gates, and respectively meeting in its centre nearly at right angles, where there still stands an octagon cross—erected in 1478 by Robert Storey, on his being translated from the see of Carlisle to that of Chichester—in the decorated style of English architecture, which, in simplicity of design, and elegance of execution, is supposed to surpass anything of the kind that is to be met with in the kingdom. The gates have long ago been removed, and the walls taken down, except on the north and east sides, where they were, upwards of a century ago, formed into terraces, covered with gravel which, now shaded with rows of lofty elm trees, afford a delightful promenade for the inhabitants, and are highly ornamental to the city. The houses are generally substantially built, the streets well-paved and brilliantly lighted with gas. The palace of the bishop is chiefly remarkable for its extensive and admirably planned gardens. The cathedral, built in the form of a cross, with a fine tower rising from the centre, surmounted by an octagonal spire, is a most beautiful building. The following are stated to be the dimensions:

	[illegible]
Total length from east to west, including Lady chapel	[illegible]
Length of transepts from north to south - - -	[illegible]
Height of the spire from the floor - - - - -	[illegible]
Height of the vaulting of the nave - - - -	[illegible]
Height of the vaulting of the choir - - -	[illegible]

The trade of this town consists chiefly in malt, flour, corn, timber, and coal. Population in 1831, 8270. Collins, the poet, was a native of Chichester, and a monument, executed by Flaxman, is erected to his memory in Chichester cathedral. A statue, from the chisel of Mr Carew, has also been erected here to the memory of William Huskisson.

CHINA. (*a.*) The modern empire of China, in addition to China Proper, (which, with its eighteen rich and fertile provinces, each of them equal in extent and population to some European kingdoms, covers an area of 1,298,000 square miles,) now embraces Chinese Tartary, a region extending from the sea of Ochotsk, on the east, to Bokhara, on the west, and from the Altay and Nershinsk mountains, on the north, to the Great Wall, on the south. China is strengthened by having Thibet on the one hand, and Corea and Loo Choo on the other, almost entirely subject to its influence; while its importance in the eyes of eastern nations is augmented by claiming to include Cochin-China, [illegible], Burmah, and Siam among its tributary kingdoms. It thus presents a dominion extending over [illegible] five degrees of latitude, and seventy of longitude, and covering an area of upwards of 3,000,000 square miles. The highest census of its population is that given in 1812, namely, 361,279,897. This is generally considered to be much exaggerated; yet on comparing all accounts, it may be pretty safely calculated, that the Chinese empire contains within its bounds at least 300,000,000 human beings.

The *cities* of China are divided into classes, and the distinction is nicely and precisely marked by the last syllable of their names, which is in fact a distinct monosyllabic word, indicating their size, rank, and municipal jurisdiction or dependence. These monosyllables, one or the other of which is found at the name of every city, are *fû* or *fou*, *cheu*, and *hien*. *Fû* denotes a city of the first class, having under its jurisdiction a certain number of cities of the two inferior classes. *Cheu* denotes a city of the second class, subject to the jurisdiction of its *Fû*; and *Hien*, a city of the third class, subordinate to its *Cheu*, as well as under the jurisdiction of its *Fû*. The study of geography might be considerably facilitated if this practice of the Chinese were general, and every nation, by a simple affix to the names of their cities and towns, would thus explain at one glance their relative rank or importance. According to Father Le Comte, there were in his time more than 160 cities of the first class, 270 cities of the second class, and upwards of 1200 of the third, besides a number of walled towns not included in any of these classes. The cities of China are formed on a regular plan, which is square, whenever the situation and nature of the ground will admit. They are all enclosed by high walls, with large gates of more strength than beauty. Towers, which vary in elevation, but which are sometimes eight or nine stories high, and in form sometimes round, but more commonly hexagonal or octagonal, are built at regular distances; and, when practicable, a wide ditch, filled with water, surrounds the whole. The streets are in straight lines; the principal of them are about thirty feet wide, but the houses are meanly built, having rarely more than one story above the ground-floor; so that the width of the streets, though not too much for the thronging population and bustle of a Chinese town, conduces but little to beauty or effect. The shops are adorned with silks, porcelain, and japanned wares, the most brilliant of which are hung outside the door to attract customers, and (the practice being universal) give the main streets a gay and somewhat of a theatrical appearance. A large board is suspended from the front of each shop; it is either gilt, or painted with some bright colour and varnished, or some fanciful sign, with the names of the principal articles sold in the shop inscribed upon it. These showy sign boards, placed at equal distances on both sides the streets, give the whole extent the appearance of a long colonnade, rather curious than beautiful.

China, like Holland, abounds in *canals*, but used more for the purposes of irrigation than conveyance. The traveller finds almost everywhere a large canal of fine, deep, clear water, flanked by two causeways, cased with flat stones or marble slabs, set in the ground and fastened by groves made in posts or columns of the same materials. From this main canal there shoot off, at certain distances, numbers of smaller canals, the waters of which are again let off into innumerable rivulets that are conducted to different large towns, or employed to irrigate the country. Besides these they have an infinite number of reservoirs and channels by which they can lay the fields under water, to produce rice, their principal food, and which requires almost constant humidity. But nothing in China or in any other part of the world in the way of canals, is to be compared with the Yun Leang, or Royal canal, which is 300 leagues in length. It was dug by an almost incredible multitude of men, and at a most prodigious expense, under the emperor Chi-tson, (about the year 1280), the founder of the dynasty of the western Tartars. "This canal," says Du Halde, "traverses the provinces of Pe-tche-li and Chantong; then it enters the province of Kiang-nan, and discharges itself into the great and rapid Yellow River. Down this river you sail for two days, when you come to another river, where you find again the canal, which leads to the city of Hoaingan; from thence it passes by many cities and large towns, and arrives at the city of Yang-tcheou, one of the most famous ports of the empire; and a little beyond this place it enters the great river Yang-tse Kiang, which divides the province of Kiang-si nearly into two equal parts, and runs as far as Nan-ngan, from whence you go by land to Nanhiong, the chief city of the province of Quang-tong, where you embark upon a river that leads to Canton, so that you may travel very commodiously, upon the rivers or canals, from the capital to the remotest part of China, being about 600 leagues, by water." "I may safely say," says Barrow, "that, in point of magnitude, our most extensive inland navigation of England can no more be compared to this grand trunk that intersects China than a park or garden fish-pond to the great lake of Winandermere."

The canals are crossed in all directions by numberless *bridges*, but owing to the facility afforded by the canals for transporting weighty burdens by water, these bridges do not require to be built of great strength, as every object of produce or manufacture can be wafted over on rafts or in barges. In general, indeed, only foot-passengers use the bridges, which are, for the most part, of a light, fanciful and elegant construction. They are found of three, five, or seven arches; the centre arch being frequently from thirty to forty-five feet wide, and sufficiently high to let vessels pass without striking their masts. Some of them stride across the canal with one bold, lofty arch. The elevation renders in many cases steps necessary, by which you ascend and descend. Some of these bridges are of extraordinary beauty, and even magnificent. There is one near Pekin, built entirely of white marble, elaborately ornamented. Others are found over the canals of still greater magnificence, and with a grand triumphal arch at each end. And others again, instead of being composed of salient arches, are flat from one side of the canal to the other, stones or marble flags of great length being laid on piers so narrow and airy, that the bridge looks as if it were suspended in the air. But the canal bridges are surpassed in magnitude, and occasionally in beauty, by the bridges thrown across rivers, or long swamps, and places exposed to inundations. Some of the latter are of prodigious extent, and have triumphal arches on them, built of wood, in the pagoda style, and splendidly painted. One of the most celebrated of these is the bridge of Loyang in the province of Fokien. According to some authorities, it is 5940 feet long by 104 feet broad; it has no arches, but is formed of 300 massy stone piles, over which are laid horizontally large stones of an equal length, which repose on the columns or piles, and afford a flat convenient passage from one side to the other. The piles rising out of the water are shaped like a boat or barge with a sharp bow, the acute angle being directed against the current, that they may suffer the less from the violence and lashing of the waves. The horizontal stones are twenty-two paces long by two broad, and there are 1400 of these mighty stone beams all alike. To prevent passengers falling off, balustrades with lions cut in stone, and other ornaments, are placed on both sides of the bridge. The whole of the bridge is built of one sort of black hewn stone. Where this bridge stands there was formerly a ferry, which was rendered extremely dangerous by the rapidity and violence of the stream. In the province of Fokien there is another majestic bridge over an arm of the sea, built of yellow and white stone. It is 2475 feet long, and 8½ feet broad; has a hundred very lofty arches, and is adorned with sculptures of lions and other animals, in the prevailing taste of the country. The Chinese described to the missionaries a similar bridge, but of nearly twice the length, as existing near the city of Focing. The Chinese have, besides, numberless bridges of boats, which correspond with those in use in Europe; and they have, and had long before we adopted them, suspension bridges. In addition to their bridges, simply for the passage over waters, they have an immense number of others to level their roads, thrown from mountain to mountain, over deep ravines; and these are frequently approached by excavations and by roads hewn out on the mountains' sides of extraordinary dimensions and difficulty. In the Alpine regions of the province of Xensi, there is a succession of these bridges and works for about ten miles.

The *public roads* in China are represented by the Jesuit missionaries as being so pleasant and so nicely paved, that a traveller might fancy he was walking over the streets of a city. Whenever an irregularity of surface occurs, if an elevation, the industry of the people has either levelled it or cut through it; and, if a hollow, they have filled it up. The roads are often paved with stones neatly laid in and fitted to each other; and, in regular succession, stone columns, not unlike our mile-stones, mark the distances. At each eighth of these pillars, which is computed a day's journey, there is an inn erected by government, and under the direction of the local magistrate, where every person travelling on the business of the state is entertained according to his rank. The common inns on the road are pretty numerous, but narrow and mean, and badly provided. In these imperial highways, as in their canals, the Chinese delight in straight lines; and, like the bridges, the roads are often ornamented with triumphal arches, and with temples and pagodas in which travellers may repose by day, but not stay all night, except indeed they be mandarins, when they may make very free with the houses of their gods, and with the idols themselves if they stand in their way. In some provinces, the public roads are flanked by a row of trees on each side, when they look like a pleasant mall or promenade, or by walls, eight feet high, to prevent the passengers damaging the well-cultivated fields and gardens. At proper distances there are seats erected in a neat style for the repose of the weary traveller, which are well guarded both against the winter cold and the summer heat. There are also occasionally found along these roads men employed by rich and charitable individuals to distribute to the poor travellers tea, and, when the weather is severe, a sort of decoction of ginger, for which no return is required save that the wayfarers forget not the name of their benefactors.

From the vast population of the Chinese empire, and the very restricted nature of their commerce, it becomes necessary that the greatest attention be paid to the pursuits of *agriculture*. The government has, from very remote times, had the merit of respecting and honouring the tillers of the soil, and of rewarding those who improved agriculture with the highest distinctions. In the ranks of society the husbandman, taking precedence of soldiers, merchants, artisans, and others, stands next to the man of letters, or state officer. Both the soldiery and priesthood, whenever the service of the former permits, and whenever the establishments of the latter are endowed with lands, are practical agriculturists. Every soldier stationed on the different guards by the great wall and elsewhere, has his portion of land assigned to him, which he cultivates, and pays his quota of the produce to the state. Even the emperor himself, at the vernal equinox, after a solemn offering to the God of heaven and earth, repairs to the fields, ploughs a few ridges of land, and casts in the fructifying seed. Rice, and not corn, is the staff of life in China. It is cultivated wherever the water necessary to its growth can be commanded, and most of what is really admirable in the industry and ingenuity of the Chinese farmers is to be found in their system of irrigation and their economy of the precious fluid. The Chinese eat an immense quantity of garlic and onions, and these the fishermen cultivate even on the bosom of the waters over which they are constantly sailing. Having positively no houses on shore, nor fixed abode, and consequently no inducement to cultivate patches of land, which their more important pursuits of fishing might require them to leave, they have invented a system of culture which may move with them, and they thus transport their gardens wherever they may go. This they do by constructing rafts of the ever-useful bamboo, which are then interwoven with weeds and strong grass, and then launched on the water and covered with earth. These floating gardens are made fast to the stern of their junks and boats, and towed after them. Thousands are born, brought up, and die in these boats, having no more communication with the shore than necessity compels. The boats are covered over in the after-part with a kind of bamboo matting, sufficiently strong and waterproof to keep out the rain, and of length sufficient to allow the inmates to lie down unexposed to sight. These poor creatures, from being confined in so small a place,—accustomed to squat upon their hams, and crawl about their boat,—are generally very awkward in their motions when on their feet. Their male children are taught the art of swimming as soon as they know the use of their legs, until which time they wear a calabash suspended round their necks, to buoy them up in case of their falling overboard.

The *constitution* of the Chinese empire is patriarchal. The fundamental principle of the administration is to preserve the peace of the empire at all events. Its constitution is less the work of political wisdom than the production of time and circumstances. Revolutions have occurred: the institutions of the country have been subverted, strangers have sat upon the throne, and ruled with an iron hand: but the empire has always returned to its former state, and the nation has become what it was before the change.

"The fundamental principle here, (says the Rev. C. Gutzlaff,) as in other despotic states, is to sacrifice individual happiness to the welfare of the whole, and to dispose of this according to the pleasure of the autocrat. In China, these proceedings are subject to invariable rule. Long experience has taught the governors to follow the same line of conduct, certain of success; whilst the people have been accustomed to submit without murmuring. China is the beau-ideal of despotism, under the endearing name of a paternal government. The great spring by which the institution is to be kept in motion is filial piety, changed towards inferiors into affectionate kindness, and towards superiors to veneration and obedience. To strengthen the hands of government, a strong line of demarcation has been drawn between its officers and the people: from the highest minister to the meanest soldier, all are by their situation interested in upholding the throne and defending the prince. Being entirely dependent on the emperor, having all to hope for and to fear from him, and nothing to expect from the nation, the attachment of those employed by the government to the existing order of things is lasting. As they are, moreover, the richest and most intelligent order, and the sovereign lords of the country, they naturally present a very formidable front to every aggressor. Scholars can look only to the court for honours and emoluments: the nation does not remunerate their studies nor labours. There are no Longmans nor Murrays in Pekin; there are no rich landholders or merchants who could prove a check upon these united powers. Any man who has amassed considerable property, and wishes to enjoy it with security, buys a nominal rank, and thus virtually enlists himself on the side of government. Meanwhile, the higher orders and great officers of the state are under a perpetual state of surveillance; a sword is for ever suspended over their heads, each man is endeavouring to rise upon the ruin of his rival. Bribery, lies, misrepresentations, mutual accusations, and every species of craft and cunning, are the order of the day among the mandarins; but they are thus kept in check, and the emperor gains a perfect knowledge of each man's character and proceedings. There are six boards, called Lich Poo, at Pekin, to which all matters of importance are referred; but they do not appear very successful in their transactions. The great task of the board of public works is to keep the Yellow River from inundation, which they never have been able to do; while the board of foreign affairs confines its attention to keeping the Mongols in proper order, and to preserve the frontiers against inroads; but they are not more fortunate. Yet, founded on despotism and ignorance, and supported by craft and cunning, without a virtue to exalt, without patriotism to secure, without religion to ennoble and purify, this immense empire not only preserves itself in outward security and inward tranquillity, but flourishes and extends. It was never before so large as it is now."

China seems indeed to be at the zenith of its glory; for neither to the east or west, the north or south, can any increase of territory be made. It has most to apprehend from the wild and lawless nomades of the north; yet the threatening position which Russia has taken in the north, and England in the south, will doubtless check the depredatory habits of these tribes; and, though unintentionally, these two powers are the strongest bulwarks of the Chinese empire. The Chinese possess great advantage over other ancient nations in not considering labour degrading, of whatever description it might be, and in *avoiding the division into castes*. Every one is at liberty to choose for himself the occupation best suited to his constitution and habits, and no one is degraded because he belongs to a certain class of society. Generally, the Chinese may be considered as an agricultural people, whose density of population exceeds the means of their subsistence; hence many individuals are without provision. Industry becomes a necessary and constant habit, whilst the least intermission of it leads to misery. Thus ground down to the earth by the most urgent bodily wants, every thought is absorbed, and there is no time nor inclination for mental or spiritual improvement. Hence the vast number of beggars, vagabonds, and the thousands who are constantly perishing for want of sustenance. The food, clothing, dwelling, and whole mode of life amply bespeak the stern necessity by which they are controlled. Those classes who are above want are too deeply dyed with the national spirit not to show themselves as Chinese by their grovelling desires. Sensual inclinations operate instead of want; their habits degenerate into sloth, because they are under no necessity to engage in labour, and the *length of their nails* is used to indicate their exemption from menial occupation.

"Another great and powerful agent (says Gutzlaff), in moulding the Chinese character is *religion*. Without taking a partial view of this subject, it must be confessed that the Confucian doctrines neither engage the affections, nor purify the heart. *Taouism*, a mere theoretical and mystical system, is ill suited to a people who are obliged to study practical usefulness in every thing. The Chinese have too much common sense to believe the monstrous fables of Buddism and embrace its idolatries to its full extent. Still the outward ceremonies are faithfully observed, while the great mass of the people show perfect indifference about the tenets, or turn every thing religious into ridicule.[*] Whoever wishes duly to observe the aberrations of the human mind, the uncontrolled sway of the passions, and the total absence of conscientious scruples, has only to live among the Chinese. They consider that alone to be a crime which is punishable by law. Moral obligations do not exist; the most sordid self-interest directs all their actions; and public opinion, which exercises a most powerful sway among Christian nations, is a thing entirely unknown in China. There is no fear of God in their hearts, and therefore no adequate restraint upon their innate vices. *Money* with the Chinese is the very idol which all, without distinction, worship. Their thoughts, conversation, and constant pursuits centre in acquiring the 'mammon of unrighteousness.' It is the national spirit, the public sentiment, and the chief good of high and low. Political questions agitate them no more than religious ones. Patient, nay slavish, in their pursuit of this phantom of happiness, they are loyal and quiet citizens as long as government does not mar their plans. They will endure the greatest indignities, and submit to the loss of their whole property, if they are afterwards only allowed to amass a new fortune. Not satisfied with hankering after money during this life, they have established a rate of exchange beyond the grave, and by burning paper laid over with very thin tin plates, they confidently hope that the asker will take the value of dollars in the next world. Wealth, long life, and *male* children are with those people the summits of human happiness; for in the possession of these objects, they hope to find perfect contentment. The government, also, has imprinted its stamp upon the Chinese character. In every despotic country the minds of the people become cringing and adulatory, and being borne down by main force, they are obliged, while defending themselves from oppression, to have recourse to deceit, and sundry disingenuous practices. Whether they are to remain peaceful, is no longer a question. They worship the rod that strikes them: the very nerve of noble enterprise is cut by their masters. They are a tame, a pusillanimous nation, filled with trembling and cunning, and formidable to their rulers only by dint of their numbers. The constitution of the government, so convenient to those who rule, and so irksome to those who obey, prompts parents to practise tyranny in their domestic circles. Thus despotism is the order of the day. Lest, however, the nation should become altogether indifferent about the constitutions of the country, the government has wisely assigned to the people a share in the administration, by raising talent without respect to nobility. This gives a strong impulse to the acquisition of knowledge: all strive for it; and the number of readers in China is far greater than in any other country in Asia, Japan excepted."

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[*] "They have invented a praying machine, into which the prayers to be recited are thrown, written on a slip of paper: as these structures are in the shape of windmills, the wind, of course, puts them in motion, and every rustling of the paper is a prayer; so that the number of ejaculations may be multiplied to millions, without any exertion on the part of the devotee."—*Gutzlaff.*

The founders of the Chinese empire, and their immediate descendants, are always spoken of as *delighting* in mild punishments; but, as plunder, and rapine, and commotion, prevailed, severer punishments were had recourse to—such as banishment and the loss of life. Revolt, or attempting the life of the emperor, crimes of the greatest kind, were punished by strangulation, and slowly mutilating the body; exterminating the whole kindred, not excepting infants; or sawing asunder the offender; the wearing of the congque, or pillory, during life; and solitary confinement. During the *Han* dynasty, at which time the criminal code was revised, the ancient punishments,—especially that of exterminating a whole family, consisting sometimes of several hundred persons, for the crime of one ambitious man—being considered as unnecessarily severe, were for ever abrogated, by an act of government. The ancient punishments for the ten capital crimes, have of late years been a source of profit to the painter; for pictures drawn on what is termed rice-paper have been imported into Europe, as confirmatory of the barbarism and cruelty of the present race of Chinese judges and mandarins; but the fact is, these cruel punishments have long since ceased to exist. Anciently for treason, murder, and adultery, the prisoner and witnesses were subject to torture, in order to compel them to confess all they knew, and their depositions were laid before the emperor and the judicial board at the capital, before punishment was inflicted. The Chinese lighter writings often detail instances in which the friends of the accused have succeeded in defeating the undue influence of the magistracy, by appealing in person before the board; and such magistrates have consequently been degraded and imprisoned. The practice of torture to obtain confession, can now hardly be said to exist. The *Gan-châ-tsze*, or provincial judge, who ranks next to the viceroy, has not the power of punishing a person capitally, except for piracy and a few other heinous crimes, but must report all cases to the emperor, and wait the decision of the Pekin board; he can transport, imprison, levy fines, and punish by bastinadoing, congque, &c. The magistrate being always in court, a culprit is no sooner taken, and his accusers in attendance, than he is put on his trial. If it be a light offence, and he is unable to pay a fine, he is laid on the floor, and the *punishment of blows* inflicted with a long flat bamboo. If the punishment is not excessive, the culprit rises and walks home, and the following day he is able to follow his employment. For a corresponding offence in this country, a person might be imprisoned a month, to the injury of his connections and family, but in China the whole affair—accusation, trial and punishment—is gone through in a few hours.

The following scale of punishments is taken from the Chinese penal code; it shows the manner in which punishment is increased according to guilt. Ten blows with the bamboo was anciently the lowest punishment; it is now repealed to four blows, and so of the others, the last column being the repealed code, viz.,

The first	nominally a punishment of	10 blows	of which only	4 blows	are to be inflicted.
The second		20 blows		5 blows	
The third		30 blows		10 blows	
The fourth		40 blows		15 blows	
The fifth		50 blows		20 blows	

The second degree or division of punishment, is inflicted with the larger bamboo, and is subdivided in the following manner.

The first	nominally a punishment of	60 blows	of which only	20 blows	are to be inflicted.
The second		70 blows		25 blows	
The third		80 blows		30 blows	
The fourth		90 blows		35 blows	
The fifth		100 blows		40 blows	

The third division in the scale of punishment is that of a temporary banishment to any distance not exceeding five hundred lee[*], with the view of affording an opportunity of repentance and amendment. Of this species of punishment there are also five gradations, namely

Banishment for	1 year, and 60 blows	with the bamboo, reduced as above.
	1½ year, and 70 blows	
	2 years, and 80 blows	
	2½ years, and 90 blows	
	3 years, and 100 blows	

Perpetual banishment, the fourth degree of punishment in order of severity, is subdivided as follows, and is reserved for cases wherein even for considerable offences, the life of the criminal is spared by the mercifulness of the laws: a hundred blows with the bamboo, and perpetual banishment to the distance of 2000, 2500, or 3000 lee. On reaching their destination, the banished offenders may follow their callings, but they are required once a week, or once a month, to appear before the magistrate of the place, and report themselves. The fifth and ultimate punishment which the laws ordain is death, either by strangulation or by beheading. All criminals capitally convicted, except such atrocious offenders as are expressly directed to be executed without delay, are retained in prison for execution at a particular period in the autumn; the sentence passed upon each individual being first duly reported to, and ratified by the emperor.

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[*] Ten lee are usually estimated to be equal to three geographical miles, but the proportion varies a little in the different provinces of the empire.

The Chinese, it is well known, have long been possessed of the art of communicating ideas. Little progress, indeed, can ever be made in the cultivation of the arts and sciences, without *writing and printing*, but both have long been understood, to a certain extent, in China. Before the time of Fo-hi, says a Chinese writer, the central government published its manifestoes by means of a certain number of interlaced threads or cords resembling the "Quippos" of the Peruvians, which had a particular signification according to the number of knots or the manner of braiding. Fo-hi first invented the eight *Kua*, the basis of the religion and legislation, as well as of the written character and literature of the Chinese empire. Great attention was now given to the sciences; at least from the time of the third dynasty, that of Tscheu. Though the greater part of the old Chinese literature was subsequently destroyed, yet, under the dynasty of Tang, there were as many and extensive libraries to be found in China as in any other part of the world during the sixth, seventh, and eighth centuries. The emperor, the higher and inferior officers of state, the literati, and the various scientific and ecclesiastical institutions, possessed considerable libraries, which are severally enumerated in the literary division of the Chinese "Encyclopædia of Matuanlin," in the 174th book. At that period China possessed a collection of not less than 80,000 volumes on the various branches of literature and science. These works were of course very expensive, and Matuanlin says, that whoever possessed a collection of books was regarded as a distinguished person. There were but few copies of the larger works, and great difficulty was found in communicating their contents throughout the empire by means of oral instruction. The distinguished individual who first discovered a remedy for all these deficiencies, and who is still looked upon by all the printers and bookbinders of the empire as their patron, was Fong-tao, who flourished in the first half of the tenth century of our own era.

In the reign of Ming-tsong (927—934) Fong-tao had the principal and, as they were called, classical works, cut out in stone plates, which had been done several times during the preceding dynasties, and obtained the sanction of the emperor to take off impressions from them, to be circulated in the country. The emperor consented, and in the third year of the period "Tschang-hing" of the reign of Ming-tsong, A.D. 932, the art of printing by means of stone plates began in China. The plate was blackened, and the characters were engraven on the stone in basso-relievo, so that on the impression the paper was black and the letters white, which is still the case in China in all their lithographic printing. The stone plates, however, were soon superseded by wooden ones, which gave rise to the art of printing by means of plates of wood, in the same way as is still done with all their larger works. According to another writer, Fong-tao is stated to have commenced at once with the wooden blocks; and, in the annals of the later five dynasties, it is stated that Fong-tao (in the second year of the period "Tschang-hing" of Ming-tsong, of the later dynasty of Tang, A.D. 931) had solicited permission from the emperor to cut in wood and print, for the use of the pupils of the imperial college, an edition of the nine king or classical works. He obtained the sanction, but the work was not finished till the second year of the period "Kuangschun," the founder of the later Tscheu (A.D. 952). The process pursued in the printing of this work by means of wooden plates has been carried on down to the present day without any essential alteration. The wood selected for these blocks is strong but not brittle; it is called Li, and resembles that of the pear-tree. From the Chinese accounts it is smooth and shining, and has a bitter flavour, on which account the worm never attacks it. This process of wood engraving differed from the previous lithography employed, inasmuch as all the letters and figures were worked in high relief; the wood being carefully cut and filed down all round them. The characters therefore, as with us, are black when printed, while the paper remains white. When we reflect on the great number of letters which compose the Chinese alphabet, the advantage of block printing is immediately obvious—and, in fact, it is the only method adapted for works of any magnitude. It is by this process that the Roman Catholic missionaries in China have printed single pages and even entire works in the Latin and other European languages—such, for instance, as the Spanish and Chinese Grammar of P. Varo, and two books of Confucius—works which are among the greatest bibliographical curiosities in the world. The manner in which the missionaries obtained these works, was by writing in a very legible hand upon transparent paper, which the Chinese wood engravers faithfully copied, without understanding a single word of the contents.

During the succeeding centuries various attempts were made to substitute moveable types for the wooden blocks, but they always terminated in a return to the old method. Under the great dynasty of Soong (A.D. 960—1280) an attempt was made to print by means of movable types made of burnt earth, and the emperor Kang-hi, of the present Mantschoo dynasty, had, according to Dr Morrison, a great quantity of movable types cast in copper. Kien-long, however, the second in succession to this wise prince, had all the types melted down during a period of great scarcity of money, in order to convert them into coin. In Dr Morrison's extensive collection of Chinese books, there are a Chinese Dictionary, in 24mo., and a history of the Loo-Chew islands, in 4 volumes, which were printed with these movable types of Kang-hi's, but the characters are far inferior in beauty and regularity to those of the ordinary wood blocks. Kien-long subsequently, however, caused 250,000 movable wooden types to be cut, which were then, and still continue to be, used in the printing of the "State Calendar," a work published every three months.

The works which have been printed in English and Chinese, at the college founded at Macao by Dr Morrison, by means of metal types, as well as the specimens of movable Chinese letters cast some years ago under the direction of M. Pauthier at Paris, are everything that could be desired, though there is no hope of ever attaining in our metal types the ease and delicacy which the Chinese engravers impart to their wooden blocks.

The Chinese printers have no notion of a real printing-press; and besides, their paper is so thin that it could not resist a hard pressure. The printer holds two very fine brushes in his right hand, of which one contains ink, and the other is dry. With the former he blackens all the letters; the latter he passes gently over the paper which has been laid on them. By this process a single man can with great ease print off several thousand sheets in a day. The Chinese paper is so exceedingly thin and transparent that it is printed on only one side. Every page is numbered, commonly also the title of the work, or of the book and chapter. Two pages are usually worked together, and the sheet of paper has a black line down the middle as a guide to the bookbinder, who folds it double, and fastens the open leaves together. Every volume is either gummed at the back with a very fine paste, or stitched with silk in a manner peculiar to the Chinese.

In modern times, improvements in the Chinese language have been few and unimportant. Perhaps we ought to say that it has deteriorated, since its difficulties have been greatly increased by the addition of many arbitrary and complicated characters. It has beauties and excellencies, and is capable of conveying thought with great precision and force. Still, the number and variety of the characters of the language are so great, that very much time must be occupied in merely learning their sounds and forms; this points to the necessity of either simplying the existing language, or of adopting another in its stead. The experiment which is now making in India, to express the various languages and dialects of that country in the Roman character, will eventually, we doubt not, be adopted in China.

The *domestic habits* of the Chinese are now well known. Their great staff of life is rice, to which may be added millet and the sweet potato. They do not understand how to bake bread. Wheaten flour is principally used for vermicelli. Beans and peas are favourite dishes. Their chief fruits are oranges, mangos, loquats, medlars, and lungyen. Their favourite meat is pork. Very little beef is consumed; but dogs, cats, and horse flesh are not refused.

The Chinese eat almost everything that comes to hand. In the streets a number of birds are daily exposed for sale, which amongst us have not yet gained much repute for flavour; among others, hawks, owls, eagles, and storks. To an European nothing can have a more laughable effect than to see the Chinese arrive with a carrying-pole supporting two bird-cages, which contain dogs and cats instead of birds. A small thin sort of spaniel appears to be most in request; they sit quite downcast in their temporary dwellings when they are brought to market, whilst the cats make a dreadful squalling, as if conscious of their fate. The flesh of these last, when they are well fed, is much esteemed in China, and they are often seen on the tables of the rich. Other Chinese bring upon their carrying-pole many dozen of rats, which are drawn quite clean, and, like pigs in our country, when they have been opened, are hung up by means of a cross piece of wood through the hind legs. These rows of rats look very nice, but they are eaten only by the poor. The tiger's flesh is much esteemed among military officers; its gall and bone being mixed with their food, in order to inspire their souls with irresistible courage and tiger strength. There are gourmands in Pekin as well as in Paris and London: and Choo-fo or Tsingping would prefer a bird's nest, or a bicho de mer (a sea slug), to all the turtle soup and venison of my Lord Mayor's dinners. The best kind of birds' nests is very dear; and a gourmand can with the greatest ease devour at one breakfast the value of as much as might support at least four people throughout the year. Shark's fins, fish maws, cow's sinews, and the antlers of deer, are in great requisition for their gelatinous qualities. Buffalo hides are also boiled down for their jelly. The favourite beverage, of course, is tea; this is drunk out of vessels which are seldom washed, lest the flavour should be diminished. No wine is extracted from the grape; but rum is distilled from the sugar cane. Beer, cyder, &c. are quite unknown. Their great entertainments last several hours, whilst tea and liquors are served up in the intervals of the repast. If the party is *classical* and consists of learned men, they amuse themselves with riddles, poems, and satires. They are a cheerful people, and at their meals all is joviality and amusement. They are extremely sumptuous in their parties, and the ceremony of inviting the guest—first by cards, then by importunate messages, and afterwards, when he is come, to sit down to table, is absurd and extravagant to a degree. When all are collected, and the host desires them to be seated, a regular scuffle ensues who shall be first at the *lowest* seat: an affectation of humility carried to a length truly preposterous. Very distinguished persons have music during the entertainment, and the time is generally spent in witnessing the tricks of jugglers and the performances of comedians. Their houses are for the most part built of brick, which are made to great perfection, and are joined so as to form triangles, squares, circles, and figures of flowers, which give to the exterior a very finished appearance. At the entrance of a rich man's house, one observes various flower-pots, and artificial rocks, mountains, and gardens. The principal hall is the most ornamental part of the house. The walls are adorned with inscriptions drawn upon a lacquered plank with golden letters. Most houses are only one story high; if two, the uppermost is inhabited by the women. The windows are small, and admit but little light, glass being scarce, and paper and shells being substituted. Terraces, as in other eastern countries, are often built on the roofs, where they ascend to enjoy the cool of the evening. The law does not permit a person to deviate from established rules in the architecture of his house. If he ventured to build an elegant or commodious habitation from his own design, his property would be confiscated and his house pulled down, under the plea of a useless waste of money. The interiors of their rooms possess very little furniture beyond what is just necessary.

The upper classes, and especially the inhabitants of the maritime provinces, are dreadfully addicted to opium-smoking. The fumes of this pernicious drug are drawn through a peculiarly-constructed pipe, whilst the wretched victim lies down. He very soon falls asleep, and on awaking, takes a cup of tea, and then again repeats the process. When it has become a habit, it cannot be left off, without the wretched being falling into a premature grave: it, of course, soon destroys the strength of the body and the faculties of the mind. All his powers are consumed in procuring means to obtain this delicious poison; and thus he frequently becomes a gambler, thief, and robber.

With regard to marriages and their treatment of the tender sex confided to their care, the Chinese vary but little from the other Asiatic nations:—"The birth of a daughter," says Gutzlaff, "is an object of sorrow; and many female children are destroyed—drowned in warm water, and at the moment of birth consigned to the grave. The government connives at this monstrous and most unnatural crime, because it acknowledges the sovereign authority of the parent over the life of its offspring, and considers female infanticide as the most effectual check upon the too rapid increase of population. The murder of female infants is prevalent throughout the empire, and perpetrated with shameless atrocity." "The parents, instead of giving a dowry with their daughter, receive a price, varying from six dollars to five thousand, according to the beauty or rank of the lady. When she leaves the paternal roof, the bride is seated in a sedan, in which she is locked up, accompanied with musicians and people bearing flags. The key of the sedan is carried by the bride's mother, who, on arriving at the bridegroom's, presents him with it. The bride is then released, and if not approved (for that is the first time she is seen by her future spouse), she may be sent back; but if her appearance is agreeable, she is introduced with many bows and ceremonious gallantries, and ducks and nods, into the great hall. They then burn incense and bow before the idol, and the whole is concluded with a repast. Forced marriages often produce tragical results: sometimes the female has recourse to poison; sometimes she is contented with the gentler but no less decisive means of liberty, by shaving her head. The grandees and rich men keep regular harems. Beautiful and accomplished females, for which the country about Nang-choo and Soo-choo is as celebrated as Circassia, are extensively bought and sold."

Corpulency is deemed a beauty in men, but a blemish in women. The women have usually a peculiarly arched eye-brow,—as much the effect of art as nature,—a very unmeaning face, and, among the higher classes, exceedingly small feet, from the tight pressure, during infancy and childhood, of small wooden shoes. This custom originated (as described in Chinese history) several centuries back, when a large body of females rose against, and endeavoured to overthrow, the government. To prevent the recurrence of such an event, the use of wooden shoes was enforced on all female infants, so small as to disable them, without great pain, to make any use of their feet. This custom has now become so familiar from long usage, that a small foot is reckoned one of the greatest attractions a Chinese female can possess. The education of Chinese ladies is extremely limited. According to Chinese writers, the first principles of morality, with skill to perform the necessary household tasks, ought to comprise the whole range of their acquirements. One author, indeed, referring to the frequent complaint of the husband that he finds very little gratification in the society of a partner whose mental resources are so small, seems to advise that he should teach her something, and encourages him by the remark, that even monkeys can be taught to play antics; but in this instruction nothing intellectual can be intended, since he concurs with other moralists, in declaring that she ought never to open a book. The Chinese, have, however, several female writers, whose learned works they hold in high esteem. To beguile the many tedious and heavy hours which must unavoidably occur to secluded females, thus totally unqualified for mental pursuits, the tobacco-pipe is the usual expedient. Every female from the age of eight or nine years, wears as an appendage to her dress, a small silken purse or pocket to hold tobacco, and a pipe, with the use of which many of them are not unacquainted at this tender age. Some, indeed, are constantly employed in working embroidery on silks, or in painting birds, insects, and flowers, on their gauze. "In the ladies' apartments, (says Mr Barrow,) of the great house in which we lived at Pekin, we observed some very beautiful specimens of both kinds in the pannels of the partitions, and brought home a few articles, which I understand have been much admired; but the women who employ their time in this manner, are generally the wives and daughters of tradesmen and artificers, who are usually the weavers both of cotton and silk. I remember asking one of the great officers of the court, who wore a silken vest beautifully embroidered, if it was the work of his lady; but the supposition that his wife should condescend to use her needle, seemed to give him offence."

Mr Abeel says that the appearance of the Chinese at Canton, differed in some respects from his preconceived notions. The most striking peculiarities to the stranger, he tells us, are the great variety of complexion, the general flatness of face, and uniformity of features, and especially the strange formation of the eye, not only with the internal angle curved, but with the lid in many cases so small, as to appear not adapted to its natural functions. "This last peculiarity is most remarkable among children. The lid appears unnaturally distended when the eye is open; at the same time it covers so much of the ball of the eye, as to produce the impression that the latter is uncomfortably confined. With the exception of the occiput, the heads of the men are shaved; while, if its luxuriance will admit, it is permitted to grow until it comes in contact with their heels. It is generally worn in a pendant plait,—the cords with which it is woven frequently supplying the deficiency of its length. It is quite a comment on fashion—"old custom," as the Chinese term it,—to associate with the popularity and prevalence of the one here described, the recency of its date, and the reproach of its origin. Upon the Tartar conquest, not two centuries ago, the Chinese were compelled to adopt this style of wearing their hair as a mark of subjugation. Many considered it such a disgrace that they preferred losing their heads to their hair. Now it has become an ornament and a mark of proud distinction. The girls wear the long plait according to the fashion of the men, but do not shave the other parts of the head. After marriage, the hair is braided upon the head, and decked with a profusion of flowers and jewels answering to the rank or means of the possessor. The ordinary style of dress differs but little in both sexes. It consists of loose pantaloons, and an over-garment or robe with long dangling sleeves, and which varies in length from the knee to the ground. Their girdles, like those of the Jews, frequently answer the purpose of purses. The stocking has no reference to the shape or size of the limb, and the shoe has a thick clumsy sole turning up in front, and destitute of elasticity to aid the step."

The Chinese take a passionate delight in their poetry, such as it is. They have poems on almost every possible subject. History, chronology, moral maxims, the laws and precepts of Confucius, agriculture, gardening, and all the peaceful arts, are conveyed and impressed on the memory through the medium of poetry. In their more refined society not to be a poet, is not to be a gentleman; and the love, if not the practice, of the poetical art descends to all grades and conditions.

The barbers, in the towns of China, go about ringing bells to get customers. They carry with them a stool, a basin, a towel, and a pot containing fire. When any person calls them, they run to him; and planting their stool in a convenient place in the street, shave the head, clean the ears, dress the eyebrows, and brush the shoulders;—all for the value of little more than a halfpenny. They then ring the bell again, and start in pursuit of another customer.

Trade with China. Almost the whole trade of foreigners with China is restricted to the single port of Canton. The Spaniards have still access to the port of Amoy on the eastern coast of China, but the privilege is said to be merely nominal, and very rarely used. The Portuguese carry on a very trifling commerce at Macao, where they have been allowed by the Chinese to form a settlement, subject, however, to great restrictions. The Russians have a land-trade with China, across the desert of Middle Asia, and on that account are not permitted to send any ships to Canton.

Canton is situated in lat. 23° 7′ 10″ N., long. 113° 14′ 30″ E.; and is built upon the left bank of the *Choo-keang*, a river which flows through it in a stream rather wider than the Thames at London bridge, and after an additional course of thirty-two miles, empties itself into a broad bay, or opening, of the great sea which washes the southern provinces of China. The entrance of this bay, which is sometimes vaguely spoken of as the mouth of the river of Canton, is about eighty miles from the city: it contains a number of small islands, among which is that partly occupied by the Portuguese settlement of Macao. At the head of the bay, fifty miles from its entrance, is the mouth, properly speaking, of the Choo-keang, or river upon which Canton stands: it is formed by two projecting points of land, which are little more than a musket-shot apart. This narrow passage is called by Europeans *Bocca Tigris*, or "Tiger's Mouth,"—a name originally given to it by the Portuguese, who were the earliest traders in these parts; in nautical phrase it is sometimes styled the *Bogue*. Twenty miles up the river is Whampoa, which may be called the "road" of Canton; foreign ships always anchor there, and never ascend further, their intercourse with the city for the remaining nine or ten miles being conducted entirely by boats.

Almost all Europeans at Canton carry on their business with the natives through the medium of the English language. Few foreigners study Chinese to any extent, and those few are chiefly scholars residing in Europe; but the Chinese at Canton find it to their interest to pick up a smattering of English, and are enabled by its means to make themselves understood by Europeans; but it is a strange jargon, made up of words grievously mispronounced, often oddly perverted from their proper meaning, and always combined according to the Chinese idiom. So extraordinary is the dialect thus produced, that an Englishman on his arrival at Canton understands little more of it than if it were French or Dutch, and finds that his own uncontaminated English is as little understood by the Chinese servant or shopkeeper. It requires a few week's practice to put him on a level with the natives, and he will then be able to speak a jargon as uncouth as any Chinaman.

The principal weights for merchandise at Canton are, the pecul, the catty, and the tale, the pecul being divided into one hundred catties, or one thousand six hundred tales. The catty is equivalent to one pound and one-third avoirdupois.

There are no commercial measures in China, all dry goods and liquids being sold by weight. Everything living or dead, organic or inorganic, is sold by weight in this celestial country; whether it be fruit or ballast-stones, oil or vegetables, living dogs or pigs, cats or poultry, they are all purchased by the catty. A Chinese does not seem to have any idea of measurement, for one was asked whether we should have much wind,—"Yes, plenty catties of wind, by, by, come;" and when some gentlemen were taking observations of the sun, the Chinese observed upon them that "they were weighing the sun." "In buying any article, however small or trifling, at Canton," says Mr Reynolds, "the seller will furnish you with a small paper, containing some Chinese characters, which are called *chops*. If called on by the custom-house officer, or mandarin, to pay duty on these articles, you simply present them with the chops, and it is their business to find the merchant who sold the article, and collect the revenue from him."

The word *Hong* is used by the Chinese to designate a commercial establishment or warehouse, and by this name the European factories at Canton have been designated. The hongs extend along the bank of the river between seven and eight hundred feet; they extend backwards in depth a hundred and thirty yards, into a long narrow lane, on each side of which are confined the abodes of foreigners. To the eastward, the line of factories is bounded by a narrow ditch or inlet from the river, serving to surround a portion of the city-wall, and to drain that portion of the town. All the factories communicate with the river by wooden stairs, from which the tea and other commodities are embarked; and the space which they occupy is traversed by three thoroughfares, leading direct from the river,—namely, China Street, New China Street, and Hog Lane,—the latter being a narrow filthy passage, inhabited by low Chinese, who keep spirit-shops, into which they entice the sailors, and rob them.

The Portuguese were the first Europeans who traded direct to China. They visited various parts of the country for sometime free from the competition of other nations; and in 1555, they appear to have concentrated themselves at Macao, where they established a settlement. We hear of their ships frequenting the port of Canton in 1578, and trading along the coast of China; but in [illegible], in consequence of some disputes which had arisen with the natives, they were restricted to their own settlement at Macao. Until the year 1637, the English trade with the Chinese was carried on indirectly, at the factories which the East India company had established in other parts of the East. In [illegible], the trade in tea commenced, that article being imported to the amount of one hundred pounds. On the 13th of February, the directors wrote thus to Madras: "In regard *thea* is grown to be a commodity here, and we have occasion to make presents therein to our great friends at court, we would have you send us yearly five or six canisters of the very best and freshest thea. That which will colour the water in which it is infused most of a greenish complexion, is generally best accepted." The import for general use had, it appears, been chiefly a private concern of the officers; but the market had thereby been so much over-stocked, that "trash thea from Bantam" had been sold for 4d. and 6d. a-pound. The trade was now, therefore, to be carried on altogether by the company themselves. Its progress, however, was severely checked by the imposition, in 1689, of an enormous duty of 5s. a-pound, which rendered it impossible to introduce with advantage any teas except those of the very finest description. In 1693, the staple commodities are said to have been Nanking silks, damasks, satins, velvets, gold thread, raw-silk, China and lacquered ware, a good quantity of fine tea, some fans and screens. In 1699, there were ordered 300 tubs (chests) of the finer green teas, and eighty of bohea.

In 1701, Chusan, Amoy, and Canton, were the ports with which the company's trade was carried on; the first was deemed the most desirable, but they were compelled to quit it the following year, though afterwards induced to return. The company soon, however, acknowledged that "they were weary of the trade to Chusan and Amoy;" and they seem at one time to have intended to forsake those ports, and use Banjarmassin, in the island of Borneo, as a depôt. It was found, however, that at Canton the traffic could be conducted on a considerable scale; the factors were, indeed, exposed to many hardships, and had ground for heavy complaints, but the increasing importance of the tea-trade made the company willing to encounter many difficulties.

In 1715, the intercourse with Canton, according to Mr Auber, had assumed somewhat of the character of a regular trade. At stated seasons ships were despatched from England, each having a supercargo, to conduct the sales and purchases. These vessels proceeded first to Macao, and thence to the Bocca Tigris, where the supercargoes were admitted to an audience with the hoppo, or Chinese commissioner of customs, with whom they stipulated for certain privileges, such as the enjoyment of free trade with all Chinese, without distinction, liberty to hire Chinese servants, to purchase provisions, &c., for their factory and ships, and other similar articles.

In 1736, the emperor, Këën-lung, (who reigned till 1796,) ascended the throne, and the year of his accession was marked by the abolition of an oppressive duty of 4 per cent.,—although the boon was coupled with conditions utterly inadmissible, and which the Chinese were therefore bribed to connive at the neglect of. About this time, also, commenced the security-system, from which the British trade has so severely suffered. A few merchants, called the Hong, were nominated, one of whom was required, on the arrival of every English ship, to become security for the regular payment of the duties; in return for which the representatives of the company were obliged to allow him a corresponding advantage. These persons, burdened by the above obligation, and having also £10,000 to remit in presents to the imperial court, found it necessary to indemnify themselves by an exorbitant price laid on the commodities.

The increased annoyance to which the English trade at Canton was exposed, led the company to seek to re-open the communication with Amoy. But they found their condition still worse at that port; and were prevented from continuing the attempt, if they had been disposed to do so, by the decree which Këën-lung issued in 1757, strictly limiting the intercourse of Europeans to Canton. This made no change in the actual course of the English trade, which had long centred in that port; yet it acted unfavourably on the interest of the factory. Hitherto, amid all their grievances, the threat of removing to another, and thus depriving the mandarins of the emoluments which they derived from the traffic, had been used with the most beneficial effect. Now, the only menace left to them was, that of quitting China altogether,—a design which neither party could believe to be seriously entertained.

In 1759, two years after Canton had obtained a monopoly of the trade, when the authorities were no longer restrained by the apprehension that foreigners would resort elsewhere, the limitation of our dealings to a few licensed Chinese was made part of the established system of trade, and those individuals, designated Security or Hong merchants, were regularly incorporated under the name of the "Cohong," with whom Europeans were permitted to deal; all transactions with other Chinese, excepting, indeed, petty shop-keepers, being declared illegal.

In 1771, the supercargoes congratulated themselves on having procured the dissolution of this obnoxious cohong, at the cost of 100,000 taels, (from £30,000 to £35,000,) which they actually expended on the occasion. In 1779-80, however, the same cohong appears again in full operation, and was made the instrument, as it has continued ever since, of levying an additional tax on foreign trade, under the designation of Consoo Fund.

In the year 1833 an act was passed providing that the exclusive trade to China enjoyed by the East India Company should cease, from April 22, 1834, the company, indeed, being obliged to close all their commercial transactions from that day. In the same year another act was passed, regulating the manner in which the open trade, thus permitted, should be carried on; and this act provided for the appointment of a superintendant of the China trade; to whom, residing in China, were granted the powers deemed necessary for the purposes of commerce. The first person appointed to this office was the late lord Napier, a captain in the navy; who received instructions to repair to Canton, for the purpose of discharging its duties. On the 14th of July, 1834, his lordship arrived, in the Andromache, at Macao; and soon after sailed for Canton, which he reached on the 25th.

Before lord Napier's arrival at Canton, all his movements had been closely watched by the Chinese government. A report was made that an English vessel of war, having on board a *barbarian eye*, (foreign officer of rank), had anchored at Cabreta Point, near Macao. Hereupon Loo, the governor of Canton, having understood that the English company was dissolved, and judging that this new officer was to supply the place of their tae-pan, or supercargo, issued an order that the hong-merchants should proceed to Macao, and ascertain what were the circumstances under which the trade was now to be conducted, and the regulations that would thence become necessary. Notice was given at the same time, that until a full report was made to the governor, and his consent obtained, the superintendent, though he might reside at Macao, was by no means to present himself at Canton. In pursuance of this order, Hou-qua and Mou-qua, deputed by the hong, proceeded to Macao, but before they could reach that place, lord Napier had set out; and, notwithstanding all their efforts to overtake him, he arrived at Canton before them. Next day, a letter from him to the viceroy was presented at the city-gates, but was rejected on account of its not being in the form of a petition. The displeasure of the government was immediately manifested by the disappearance of all the native servants in the employ of the British.

A strong sensation was now created in the city, and a report was made to the hoppo, that on the 18th of the present moon, about midnight, "a barbarian ship's boat had arrived at Canton, bringing four English devils," who took up their abode in the factory. This being connected with the appearance of a British man-of-war in the outer seas, was represented as a clandestine stealing into Canton. The governor issued an order, declaring the impossibility, that in conformity to the laws of China, this new eye or officer could continue in that city:—"Even England has it laws; how much more the celestial empire! How flaming bright are its great laws and ordinances, more terrible than the awful thunderbolt! Under this whole bright heaven, none dares to disobey them. Under its shelter are the four seas. Subject to its soothing care are the ten thousand kingdoms." Actuated, however, by feelings of clemency, and allowing for the ignorance of national laws and customs incident to a stranger, he ordains, that if the latter, after having despatched the business on which he came, shall immediately return to Macao, and promise never to resort to Canton without special permission, the past offence will be overlooked.

The hong merchants tried all the means in their power to induce Lord Napier to give way; but his lordship having been refused access to the imperial officers, declined to communicate with the merchants. The latter, frustrated in all their endeavours, resolved to secure the good-will of their own government by proposing a suspension of the trade. By taking this course they obviated the suspicion of collusion, which probably induced the government to lay upon them so heavy a load of responsibility. In an elaborate mandate, issued by governor Loo, their conduct is declared to be most highly praiseworthy, "manifesting a profound knowledge of the great principles of dignity." Yet he does not proceed immediately to take the strong step recommended. He pretends, indeed, that the trade and the duties arising from it, "do not concern the celestial empire, to the extent of a hair or a feather's down." But knowing the divine wish of his great master to cherish both those within and those without, he was unwilling to involve thousands of the latter in ruin for the disobedience and obstinacy of one individual. He therefore allowed a short interval, that the barbarian eye, said to be "a man of very solid and expansive mind, and placid speech," might have an opportunity to reconsider his rash decision.

At length, on the 2nd of September, the long-threatened order for the entire suspension of the trade was issued. Its effects were immediately apparent. Fresh provisions could no longer be procured, and lord Napier and his suite were obliged to live on salt meat conveyed from the ships of war. Matters being thus brought to extremities, the resolution was taken to order up his Majesty's ships, Andromache and Imogene, which were anchored without the Bogue. The ships began to move on the 7th, and the forts defending the entrance of the river fired upon them. A contest ensued for an hour and three quarters, the time occupied in the winding passage of the channel, and the ships then anchored, in consequence of the state of the wind, until the 9th. On that day they proceeded on their way, and a contest again ensued with the forts on the shore, which, of course, were unable to prevent the passage of the vessels, though they occasioned the death of one man in each. On the 11th another order was issued, in which the former demands of the Chinese government were repeated, and the conduct of lord Napier severely stigmatised. Yet it was still intimated to him that, if he would repent of his errors and even then obey the laws of the empire, indulgence would be extended to him. It is unnecessary for us to detail the occurrences of the few days following, which rendered lord Napier's position a very difficult one. His difficulties too were increased by severe indisposition, caused by toil and anxiety. Under these circumstances, he shrunk from the calamities which would ensue from the continued suspension of intercourse, and on the 14th he announced his determination to yield, and to quit Canton. The ships of war, also, on the demand of the native government, were ordered to move out to Linton. Two chop boats were provided for lord Napier, in which he embarked on the 21st. They reached Heang-shang on the 23d, where they were detained two days amid a terrible beating of gongs and other noises, which severely aggravated his lordship's illness. They reached Macao on the 28th, where lord Napier expired on the 11th October. A re-opening of the trade took place on the 27th of December following.

The results of the first four years' experience of the free trade to China have more than justified the anticipations of those who expected the greatest success from the abolition of the monopoly. At an average of the three or four years preceding the dissolution of the Company's charter, their average annual imports of tea amounted to about 31,500,000 lbs. a year; but in 1833-34, the last year of the charter, the imports were only [illegible] lbs. The year 1835, the first year of the free trade, presents a very different result: the imports having amounted to 43,000,000 lbs., exceeding by above 10,000,000 lbs., or 30 per cent., the Company's imports when largest! We subjoin an account of the quantities of tea imported into the united kingdom, the quantities retained for consumption, and the nett revenue derived from the same, in 1834, 1835, 1836, 1837, and 1838.

Years.	Imports.	Exports.	Retained for Consumption.	Nett Revenue.
	lbs.	lbs.	lbs.	£
1834	32,643,900	1,181,00[illegible]	[illegible]	[illegible]
1835	44,360,550	[illegible]	[illegible]	[illegible]
1836	49,307,701	[illegible]	[illegible]	[illegible]
1837	36,973,981	4,716,9[illegible]	[illegible]	[illegible]
1838	39,887,441	- -	[illegible]	

The excess of the quantity retained for consumption in 1836 was occasioned by the change in the duties that year, which made it necessary to enter all the heavy stock of bohea then in bond, in order to escape the duty of 2s. 1d. to which it would otherwise have become liable.

Account of the Quantity and Value of the different Sorts of INDIAN OPIUM *imported into China during the Nine Years ending with* 1835-36.

	Patna.		Benares.		Malwa.		Total.	
	Chests.	Value.	Chests.	Value.	Chests.	Value.	Chests.	Value.
		Dollars.		*Dollars*		*Dollars*		*Dollars*
Season 1827-28	4,006	4,019,350	1,128	1,105,805	4,401	5,299,920	9,535	10,425,075
— 1828-29	4,831	4,574,650	1,130	1,029,585	7,171	6,928,880	13,132	12,533,105
— 1829-30	5,564	4,820,448	1,579	1,329,129	6,857	5,907,580	14,000	12,057,157
— 1830-31	5,085	4,454,809	1,575	1,335,395	12,100	7,114,059	18,760	12,904,263
— 1831-32	4,442	4,234,815	1,518	1,448,194	8,265	5,818,574	14,225	11,501,584
— 1832-33	6,410	5,115,126	1,880	1,455,603	15,403½	8,781,700	23,[illegible]03½	15,352,429
— 1833-34	7,893	5 023,175	1,642	1,066,459	11,715	7,916,971	21,250	14,006,605
— 1834-35	7,558	4,368,245	2,549	1,427,604	9,982	5,962,930	20,089	11,758,779
— 1835-36	9,011	6,712,196	2,005	1,407,510	15,002	8,986,198	26,018	17,106,903

The use of opium, for the purpose of exhilarating the spirits, has long been known in Turkey and Syria, but in those countries the poisonous drug is either taken as a pill or chewed after the manner of tobacco. In China, however, the mode of using it commonly adopted is that of smoking, although there are some few who use it in much the same way as it is used in Turkey and Syria. The following is the manner in which it is prepared:—The opium is imported into China in a crude state, the packages of it having attained a certain degree of consistency; those packages are dissolved in hot water, and the extract thus obtained is dried, and smoked through a pipe. Its effects, when taken in this way, are precisely analogous to those of swallowing it in its crude state. Opium shops are to be found in all the streets of China, just as public-houses and gin palaces are to be seen here, and the wretched victims of this degrading vice, fleeced of their all, are to be seen hanging their heads at the doors of these shops, and in many cases, shut out from their dwellings by angry relatives or ruthless creditors, are left to die unpitied and despised in the streets. A native artist, named Sunqua, residing in China-street, Canton, has executed some paintings on rice paper, which, forming a series, six in number, and which, in fact, are an exact counterpart of Hogarth's famous Rake's Progress. The design of these pictures is to show the progress of the opium smoker from health and prosperity to misery and degradation. The first of these pictures represents a young man, the son of a gentleman of fortune, richly attired, and in all the 'freshness and vigour of youth. On his right is a chest of treasure, gold and silver; and on his left a personal attendant, constantly employed in preparing the crude article purchased and brought to the house for his use. In the second of these pictures he is reclining on a superb sofa, with a pipe in his mouth, surrounded by courtesans, two of whom are young, in the character of musicians. His money now flies without any regard to its amount. The third of these pictures represents him, after a short period of indulgence, with a countenance sallow and haggard, with high shoulders and naked teeth, and moping on a very ordinary couch, with his pipe and other smoking apparatus lying by his side. At this moment his wives, or his wife and a concubine, come in; the first, finding the chest emptied of its treasure, stands frowning with astonishment, whilst the second gazes with wonder at what she sees spread on the couch. In number four his houses and lands are all gone, his couch is exchanged for rough boards and a ragged mattress, his shoes are off his feet, and his face is half awry, as he sits bending forward and breathing with great difficulty. The fifth represents him scraping together a few copper cash, with which he hurries to one of the smoking houses to buy a little of the scrapings from the pipe of another smoker, to allay his insatiable cravings. In the last of these pictures he appears as a confirmed sot, sitting upon a bamboo chair, continually swallowing the fæces of the drug, so foul that tea is required to wash them down, his wife and child seated near him, and, by winding skeins of silk from bamboo reels, earning for themselves and him the means of dragging out a miserable existence. These pictures are to be considered, not as the result of a singular notion in the mind of an isolated individual, but as indications of the general sense of a large class of the community in reference to this degrading vice.

The extent to which this pernicious drug has been introduced into China by our own countrymen during the last twenty-one years has been such as to show a ten-fold increase. The mode of cultivating it in India is thus described. The ryot, or immediate cultivator of the soil, selects a piece of ground, which, by repeated ploughings, he makes completely fine, removing all the weeds and grass. The field is then divided into squares, with dykes running in all directions, lengthways and crossways. A pit or sort of well is dug at one end of the field, from which, by a leathern bucket, water is raised into one of the principal dykes, and in this way is conveyed into every part of the field, as required. The seed is sown in November, and the juice is collected in February and March, usually during a period of about six weeks. As soon as the plants spring up, the weeding and watering commence, and are continued till the poppies come to maturity. Perpendicular cuts or scratches are then made in the rind of the bulbous head, from which the juice exudes, which is daily collected, and delivered to the local officers. The East Indian government annually enters into an engagement with the ryots or cultivators, through an intermediate agency, constructed in the following manner:—There is first a collector, who is a European; secondly, there are gomastahs, a superior class of men. both in education and caste; thirdly, sudder mattu, a respectable class of landholders; fourthly, village mattu, the principal villagers, a little superior to the ryots; and fifthly, the ryots, the chief labourers in the cultivation of the poppies. The engagement entered into with government is this: when the poppy is ripe, and immediately before the period of extracting the juice, the gomastah and his establishment make a circuit of the country, and form, by guess, a probable estimate of the produce of each field. He then makes the ryot enter into an engagement to deliver the quantity estimated, and as much more as the field will produce, at the price previously fixed; and if he fails to deliver the estimated quantity, and the collector has reason to suspect him of embezzlement, he is empowered by law to prosecute the ryot in the civil court for damages. The quantity of opium thus grown, under the sanction of the East India Company, and imported into China from the year 1816 to 1836, is given by the Rev. W. H. Medhurst, in his work on the state and prospects of China, in the following tabular form:—

	Chests.	Value.	
In 1816	3,210	3,657,000	dollars.
1820	4,770	8,400,800	—
1825	9,621	7,608,205	—
1830	18,760	12,900,031	—
1832	23,670	15 338,160	—
1836	27,111	17,904,248	—

In a note Mr Medhurst adds, that during the year ending in the spring of 1837, 34,000 chests were imported, and the deliveries during the month of July, of the same year, amounted to 4,000 chests.

This quantity of opium, thus grown in India, and annually imported into China, appears large, but, what is surprising in reference to it is, that every one of these chests are smuggled into the celestial empire. As early as the year 1796 the evils resulting from the practice of smoking opium had awakened the attention of the Chinese government, and the practice was accordingly forbidden under penalties which have been continually increasing in severity. In 1821 the Hong merchants of Canton were called upon to give securities that no opium was contained in any of those vessels which were permitted to enter the harbour of Canton, and discharge their cargoes there. Nay, so fully were the East India Company convinced of the importance of carrying on their regular trade with China with clean hands, that any one of their regular captains, or officers, who had brought with him to Canton a single chest of opium, would have been instantly and for ever dismissed from the Company's service. All the opium, therefore, which is now, or which has been for the last forty-three years, introduced into China by us, has been smuggled into the country in defiance of the laws and regulations of the Chinese government.

A few extracts from some authentic documents will serve to show the light in which the people of this country are viewed as engaged in this traffic, as also the desire of the government of China to effect its suppression. The following is from the memorial of Heu Naetse, an officer of the local courts of Pekin, addressed to the emperor:—"In the first year of Keaking, 1796, those found guilty of smoking opium were subject only to the pillory and bamboo. Now they have, in the course of time, become liable to the severest penalties—transportation in various degrees, and death after the ordinary continuance in prison. Yet the smokers of the drug have increased in number, and the practice has spread almost throughout the whole empire. In the year of Keaking there arrived, it may be, some hundreds of chests annually. The number has now increased to upwards of 20,000 chests, containing each an hundred catties. The total quantity sold during the year, amounted in value to ten and some odd millions of dollars; so that, in reckoning the dollar at seven mace standard weight of silver, the annual waste of money somewhat exceeds ten millions of taels. Formerly the barbarian merchants brought foreign money to China, which, being paid in exchange for goods, was a source of pecuniary advantage to the people of all the sea-board provinces, but latterly the barbarian merchants have clandestinely sold opium for money, which has rendered it necessary for them to export foreign silver. The foreign money has been going out of the country, while none comes into it." This memorial was presented on the 2d of July, 1836, and an imperial edict was issued for inquiry into the subject. The great object, it will be seen, which Heu Naetse had in view was to prevent the opium from being clandestinely brought in, and the money of the country by that means from being drained off.

Choo-Tsun, member of the council of the board of rites, in a memorial addressed to the emperor about the same time, took another view of the matter, and prayed for the suppression of this iniquitous traffic as a great injury to the army and to the people at large. "To sum up the matter," he says, "the wide-spreading and baneful influence of opium, when regarded simply as injurious to property, is of inferior importance; but when regarded as hurtful to the people, it demands most anxious consideration; for in the people lie the very foundation of the empire. Property, it is true, is that on which the subsistence of the people depends, yet a deficiency of it may be supplied, and an impoverished people improved; whereas it is beyond the power of any artificial means to save a people enervated by luxury. In the history of Formosa we find the following passage:—'Opium was first produced in Kaoutsinne, which by some is said to be the same as Kalapa of Batavia. The natives of this place were at first sprightly and active, and, being good soldiers, were always successful in battle; but the people called Hung-maou (red-haired) came hither, and having manufactured opium, seduced some of the inhabitants into the habit of smoking it. From these the mania for it rapidly spread throughout the whole nation, so that, in process of time, the natives became feeble and enervated, submitted to the foreign rule, and were ultimately subjugated.' Now, the English are of the race of foreigners called Hung-maou. In introducing opium into this country their purpose has been to weaken and enfeeble the celestial empire. If not early aroused to a sense of our danger, we shall find ourselves ere long on the last step towards ruin."

Many memorials of a similar kind were addressed to the head of the celestial empire on this subject, and early in the year 1839 the most active measures were taken for the suppression of the trade, by the Chinese government seizing the opium at Canton, and imprisoning many British merchants. That the government of China has a right to exclude any article of traffic which may be smuggled into the empire, in defiance of express edicts, is not to be doubted; but what steps Britain may take regarding the imprisonment of her subjects, most of whom, it is said, had no connection with the opium trade, remain to be seen.

CHINCHILLA; a species of field-rat, in great estimation for the extreme fineness of its wool, a rich fur, as delicate as the silken webs of the garden-spiders, may be so termed. It is of an ash gray, and sufficiently long for spinning. The little animal which produces it is six inches long from the nose to the root of the tail, with small pointed ears, a short muzzle, teeth like the house-rat, and a tail of moderate length, clothed with a delicate fur. It lives in burrows underground in the open country, in the northern provinces of Chili, and very fond of being in company with others of its species. It feeds upon the roots of various bulbous plants, which grow abundantly in those parts, and produces, twice a year, five or six young ones. It is so docile and mild in temper, that if taken into the hands it neither bites nor tries to escape, but seems to take a pleasure in being caressed. If placed in the bosom, it remains there as still and quiet as if it were in its own nest. This extraordinary placidity may possibly be rather due to its timid nature. As it is in itself peculiarly cleanly, there can be no fear of its soiling the clothes of those who handle it, or its communicating any bad smell to them, for it is entirely free from that ill odour which characterizes the other species of rats. For this reason it might well be kept in the houses with no annoyance, and at a trifling expense, which would be abundantly repaid by the profit on its wool. The ancient Peruvians, who were far more industrious than the modern, made of this wool coverlets for beds and valuable stuffs.

The beautiful fur of the chinchilla, which exceeds in warmth and softness that of any other animal, has long been known as an expensive and useful article in the dress of ladies; but, well known as it was in commerce as a valuable fur, no information had been obtained as to the animal that furnished it, until within these few years. The first chinchilla that arrived alive in England was brought by the late expedition to the north-west coast of America, under the command of captain Beechey, and was presented by him to the Zoological society.

CHIPPENHAM; a market-town in the county of Wilts, situated on the south bank of the Avon, by which it is nearly surrounded, and over which is a fine stone bridge of twenty-two arches. There are a few grist mills, and the tanning of leather is carried on upon a large scale, but the business of the town seems to arise principally from its being a great thoroughfare on the Bath and Bristol roads, having, too, the advantage of the Wilts and Berks canal, which passes close by the town. Distant from London ninety-three miles W.; from Bath thirteen E.N.E. Population in 1831, 4333.

CHORLEY; a market-town of Lancashire, situated in the middle of the county, thirty-two miles S.E. from Lancaster, on the great turnpike road between Liverpool and Preston, near the source of a rivulet called the Chor, which after flowing through some pleasant and picturesque valleys, falls into the Yarrow, a large stream which encircles the southern extremities of the township. The townhall is a neat modern structure, the lower part of which is used as an open market, which is well supplied with provisions. The increase of population has latterly been great, owing to the [illegible] with which the cotton manufacture in all its branches has been carried on here. There are numerous printing and bleaching establishments in the vicinity of this town. Population of town and parish in 1831, 9282.

CHURTON, Ralph, Archdeacon of St David's, rector of Middleton Cheney, Northamptonshire, M.A., was born in the parish of Malpas, Cheshire, Dec. 8, 1754. He lost his parents, who were in humble circumstances, early in life; but by [illegible] Townson's recommendation, he was [illegible] Brazen Nose in 1772; and the same gentleman had contributed one half towards his academical expenses. In 1778, he was elected a fellow of his college; in 1785, he was chosen Bampton lecturer; appointed Whitehall preacher, by bishop Porteous, in 1788; in 1792, his kind friend and benefactor, Dr Townson, lived to see him presented by his college to the living of Middleton Cheney;—and in 1805 he was collated to the archdeaconry of St David's, by bishop Burgess.

The archdeacon was the author of a numerous list of works, chiefly in divinity and ecclesiastical biography, bearing the impress of a conscientious devotedness to principle, under the guidance of a cultivated taste and a sound understanding. The titles of the principal of these are as follows:—1. Bampton Lectures; eight Sermons on the Prophecies relating to the Destruction of Jerusalem, preached before the University of Oxford. 1785, 8vo. 2. A Memoir of Thomas Townson, D.D., Archdeacon of Richmond, and Rector of Malpas, Cheshire, &c. prefixed to "A Discourse on the Evangelical History from the Interment to the Ascension," published after Dr Townson's death by John Loveday, Esq., D.C.L.: Oxford, 1793. This memoir has been wholly or in part thrice reprinted; in 1810, prefixed to an edition of Townson's whole Works, 2 vols. 8vo.; in 1828, with a private impression of "Practical Discourses," by the late archdeacon Townson, edited by the present distinguished and venerated bishop of Limerick; and in 1830, with the same Discourses published by Messrs Cochran and Duncan. 3. A Short Defence of the Church of England, &c., addressed to the Inhabitants of Middleton Cheney, Northamptonshire: Oxford, 1795. 4. An Answer to a Letter from Francis Eyre, of Warkworth, Esq., on the "Short Defence," &c.: Oxford, 1796. 5. A Postscript to an Answer to Francis Eyre, Esq., occasioned by his late publication, entitled A Reply to the Rev. R. Churton, &c.: Oxford, 1798. 6. Another Postscript to the same: 1801. 7. A Letter to the Bishop of Worcester, occasioned by his Strictures on Archbishop Secker and Bishop Lowth, in his Life of Bishop Warburton: Oxford, 1796. 8. The Lives of William Smyth, Bishop of Lincoln, and Sir Richard Sutton, knight, Founders of Brazen Nose College, Oxford: 1800. 8vo.—To this work a Supplement was published in 1803. 9. The Life of Alexander Nowell, Dean of St Paul's, &c.: Oxford, 1809. 8vo. 10. The Works of Thomas Townson, D.D., with an account of the Author, an Introduction to the Discourses on the Gospels, and a Sermon on the Quotations in the Old Testament: 1810. 2 vols. 8vo. 11. Several detached Sermons on various occasions.

The last publication from his pen was a short Memoir of his friend, Dr Richard Chandler, prefixed to a new edition of his "Travels in Asia Minor and Greece." 2 vols. 8vo. Oxford, 1825.

Archdeacon Churton married, July 11, 1796, Mary Calcot, of Stene in Northamptonshire, and had eight children. In private life, he was a zealous and unchanging friend, and most exemplary in all his domestic and social duties. His diligence as a parish priest was unremitting: during an incumbency of nearly forty years in a poor and populous village, he was never for any continuance absent from his parish. To purposes of charity and literature he was ever ready to devote a portion of an income which was far from abundant. Though his knowledge was most extensive, he had nothing of the pride of learning; and, in his addresses to his country congregation, he spoke a language which the poorest could comprehend. He died on the 23d of March, 1831; aged seventy-six.

CINCHONINE; a vegetable alcali, found along with quinine, in the several species of Peruvian bark. It exists, along with a little quinine, in the pale bark; with an equal proportion in the red bark, and in very small quantity, with much quinine, in the yellow bark. It may be extracted by the same methods as quinine, from which it is separated by its easy crystallisation. It is bitter and febrifuge, but is less used than the sulphate of quinine, which is much cheaper. See *Bark*.

CINQUE PORTS, (*a.*) certain English ports, on the coast of Kent and Sussex, bound, on condition of certain privileges, to furnish the sovereign, when called on, with a considerable naval force.

During the period of Roman dominion in Britain, it was found necessary, in consequence of the incursions of the pirates then infesting the northern seas, to unite a certain number (nine,) of the ports, under the governance of an officer, for the better defence of the coast. This system was continued by the Saxons, who, however, only incorporated five ports for this object; though, as there is no charter in existence prior to the reign of Edward I., some writers have assumed that they did not exist as a corporation until then. From the mention of Dover, Sandwich, and Romney in the Domesday Book, as privileged ports, and from various concurring circumstances, the date of their original incorporation may be assigned to the early period we have alluded to.

Our early history affords abundant evidence of the eminent services and high importance of the Cinque ports, both in times of war and of peace. During the former, they were for many centuries the chief arm of our naval power, whilst they greatly promoted the defence of the districts adjoining the coast during the latter. The arduous, and almost incessant, duties which they were bound by charter to perform, tended, in no inconsiderable degree, to foster the growth of hardy and experienced seamen; and their history, consequently, abounds with splendid instances of naval gallantry. In return for these services, various privileges and immunities were granted them from time to time; and it has been well observed, that, "in almost every reign, the pages of history show with how great honour and reputation the ports discharged the sacred trust reposed in their valour, skill, and bravery, by their confiding country."

In conformity with their general name, there are five head, or incorporated ports,—Hastings, Sandwich, Dover, Hythe, and Romney; but no less than thirty other places are severally united with, and participate in their privileges, as members of the original incorporation, and amongst which we may mention Margate, Ramsgate, Rye, Winchelsea, Folkestone, Faversham, Deal, and Walmer.

In order that they might efficiently maintain the free navigation of the channel, and protect the coast from foreign enemies and pirates, they were compelled constantly to keep up a considerable naval force, being obliged to furnish, when called upon by the crown, 57 ships, manned by 1197 men and 57 boys, at their own charge, for fifteen days at one time, after which it was in the power of the sovereign to keep them in commission for an unlimited period, at a stipulated rate of pay, which, however, was very insufficient to defray the heavy expenditure necessarily incurred. Notwithstanding this, there have been various instances where they contributed more than double the number of vessels required by their charter, thus incurring a heavy loss. In consideration of these services, however, the Cinque ports had many honours and privileges of great importance. "They were," we are told, "entitled to send two barons to represent them in parliament; they were, by their deputies, to bear the canopy over the king's head at his coronation, and to dine at the uppermost table, on his right hand, in the great hall; they were exempted from subsidies and other aids; their heirs were free from personal wardship notwithstanding any tenure; they were to be impleaded in their own towns, and no where else; they were to hold pleas and actions, real and personal; to have conveyance of fines, and the power of enfranchising villains; they were exempt from tolls, and had free liberty of buying and selling," with many other privileges.

At the period of the Norman conquest of England, the Cinque ports fleet was so formidable, that it was only in consequence of its absence on the northern coast of England, in pursuit of a Norwegian fleet, which it completely destroyed, that William was enabled to effect a landing on the British shores. Having learned that the ports fleet was making all sail from the north, the Norman sovereign was compelled to burn the greater part of his ships, to prevent their falling into the hands of the English. The Cinque ports rendered [illegible] eminent services at the period of the threatened invasion of the Spanish armada, on which occasion they fitted six new ships of large size, at a cost of £43,000.

The government and direction of these ports is intrusted to an individual of rank and consequence, who assumes the style and title of "lord warden, chancellor, and admiral of the Cinque ports," an office which has frequently been held by heirs apparent to the throne. Amongst the personages of the blood royal, on whom the mantle of the lord warden has fallen, we may mention Harold II., before his accession to the crown; Odo, bishop of Bayeux, half-brother to William the Conqueror; Edward I., when prince of Wales; Henry V., when prince of Wales; Humphrey, duke of Gloucester, the youngest son of Henry IV.; Richard III., when duke of Gloucester; Henry VIII., before his accession to the crown; James II., when duke of York; and prince George of Denmark. The office has also been held by many individuals of high eminence, among whom may be mentioned [illegible] Pitt and the duke of Wellington. The [illegible] £3000 per annum.

The last charter for the government of [illegible] Cinque ports was granted by Charles II., in [illegible] twentieth year of his reign, which not only confirmed all preceding charters, but conferred additional privileges upon the freemen. This charter was subsequently confirmed by James II. But [illegible] glory of the Ports has long been of the [illegible] Sandwich, once one of the most extensive [illegible] opulent ports in Britain, is now, partly from [illegible] ruin of its harbour, a small and [illegible] borough; Winchelsea, which, in the time of [illegible] Elizabeth, was styled by that princess, a "[illegible] London," has experienced a similar reverse. [illegible] was once so extensive and populous, as to [illegible] seven parish churches; Rye and Romney are [illegible] desolate; and of all the Cinque Ports and [illegible] dependencies, most of which were [illegible] extensive havens, only Dover, Hastings, [illegible] and Ramsgate, are now in a flourishing [illegible] nor does their prosperity result from any [illegible] stance connected with their original privileges. The "decline and fall" of the Cinque ports from their ancient eminence, may be attributed to the ruin or injury of their harbours, by the long-continued recession or destructive effects of the sea; the abolition of their exclusive commercial privileges; and the alteration which has been made in the system of raising a maritime force. Their decay consequent on these changes, was progressive, though its results were not the least certain.

The court of the Cinque ports, for holding pleas, as well as the grand assembly of the same, was originally held at the Shepway-cross, near Limne, where the oath was administered to the lord warden on his induction into office. This high functionary is now generally sworn in at Bredenstone hill, to the south-west of Dover, opposite the castle, where the ancient court of Shepway was held, and most of the business relating to the Cinque ports transacted. In addition to the above, the lord warden also holds a court of equity, as chancellor, and a court of admiralty as admiral of the ports, which is generally kept in the church of St James at Dover. Walmer castle, about a mile to the north of Deal, has long been appropriated as the residence of the lord warden of the Cinque ports.

CIRENCESTER; an ancient town in the county of Gloucester, situated on the west bank of the Charn, a few miles from its confluence with the Thames, eighty-nine miles W. by N. from London. Cirencester is said to have been a town of some importance when Britain was occupied by the Romans, at which period its walls enclosed an area two miles in circumference. During the heptarchy it passed alternately into the hands of the kings of Wessex and Mercia, and was stormed by the Danes in 879. Canute held a parliament here. It was again stormed and dismantled by Henry III. in his wars with the barons, and in the reign of Henry IV., the lords Surrey, Salisbury, and others having taken up arms to restore Richard II., were assaulted and slain at an inn in the town by the bailiff and inhabitants, who sent their heads to London; in return for which good service the king granted them four does and six bucks annually, out of the forest of Bradon, a pipe of wine, and a charter of incorporation. Here was anciently a castle, and an abbey for black canons, established in 1117, by Henry I., on an old foundation, for prebendaries, which had existed before the conquest. The abbot was a mitred one, and sat in parliament. Formerly the manufacture of woollen cloth was carried on here to a considerable extent, but the trade now is trifling. Population in 1831, [illegible]0.

CLARKE, James Stanier, LL.D., F. R. S., canon of Windsor, rector of Preston cum Hove, Sussex, and deputy clerk of the closet to George IV.; was the eldest son of the Rev. Edward Clarke, rector of Buxted, in Sussex (son of the Rev. William Clarke, the intimate friend of Mr Bowyer, the learned printer; see Nichol's "Literary Anecdotes," vol. iv. p. 382.), by Anne, daughter of Thomas Grenfield, Esq., and brother to Dr E. D. Clarke, the celebrated traveller. He was of Jesus College, Cambridge, LL. B. 1805., LL. D. per Lit. Reg. 1816. He was for some years a chaplain in the royal navy, and was chaplain to Lord Nelson at the battle of Trafalgar. He afterwards distinguished himself as a preacher at Park street and Trinity chapels; and having been introduced by admiral John Payne to George IV., was for many years domestic chaplain and librarian at Carlton House, and honoured by the particular favour of his royal master. He was instituted to Preston in 1790, and he was also for some time rector of Coombs, Sussex, in the gift of the earl of Egremont. The following are the titles of Dr Clarke s publications: "Naval Sermons," preached aboard H.M.S. the Impetueux, 1798, 8vo. "The Progress of Maritime Discovery, from the earliest Period to the Close of the Eighteenth Century," 1803, 4to. "Falconer's Shipwreck, with a Life of the Author," 1804, 8vo. "Naufragia, or Historical Memoirs of Shipwrecks," 1805, 3 vols. 12mo. "Life of Lord Nelson," (in conjunction with John M'Arthur, Esq.), 1809, 2 vols. 4to. An abridgement of the same, 1810, 8vo. "Sermon at the Anniversary of the Sons of the Clergy," 1811. An edition of Lord Clarendon's Essays, 1815, 2 vols. 12mo. "The Life of King James II.," from his own Memoirs and the Stewart MSS. at Carlton House, 1816, 2 vols. 4to. (The prince regent had then appointed him historiographer to the king.) He was also the founder of the monthly miscellany called "The Naval Chronicle." He died Oct. 4. 1834, at Brighton.

CLIFTON. See *Bristol.*

CLITHEROE; a market-town of Lancashire, distant from Manchester thirty miles N., from Lancaster twenty-six S.E. It is situated at the foot of Pendle-hill, on the east bank of the Ribble. The business of the place is, generally speaking, the cotton manufacture, for the spinning, weaving, and printing of which there are extensive establishments both in the town and neighbourhood. The market-day is Tuesday. This place belonged originally to the family of Lacy, who erected a castle here sometime in the 12th century. This castle was bestowed upon Monk by Charles II., and dismantled by order of the parliament in 1649. A modern castle has been built within its precincts. The first charter of the borough, granted during the life-time of Henry de Lacy, who died about the middle of the 12th century, has been confirmed by many successive monarchs. By this charter the government was vested in two bailiffs, chosen annually by the burgesses out of their own body. Clitheroe sent, from the time of Elizabeth, two members to parliament, but was deprived of one member by 2° Will. IV. c. 45. and schedule B. Population in 1831, 5213.

CLONFERT; a parish, and the seat of a diocese, in the county of Galway, Ireland, containing 5915 inhabitants. A monastery is said to have been founded here, about the year 553, by St Brendan, who died on the 16th of May, 577, in the ninety-fourth year of his age. Moena, the successor of St Brendan, was the first bishop; and the treasures of the place frequently induced the Danes to visit it as an object of plunder. During the middle ages this church was famous for its seven altars; and the western front, erected by John, bishop of Clonfert in 1270, was remarkable for the delicacy of its workmanship. The present cathedral, which is both capitular and parochial, is an ancient and capacious structure. The see was united to Kilmacduagh in 1602; it extends thirty-seven miles in length and thirty-two in breadth, occupying an area of 215,000 acres, and reaching into the counties of Galway and Roscommon. The chapter consists of a dean, archdeacon, eight prebendaries, and a sacrist. The fifty-nine parishes in the diocese are united into fourteen. The bishop's palace is adjacent to the village.

CLONMEL; a market-town and parish of Ireland, the latter partly in the county of Waterford, but chiefly in that of Tipperary. The town is situated twenty-three miles W. by N., from Waterford and eighty-two S. W. by S. from Dublin, upon the river Suir, which is navigable by large barges hence to Carrick and to Waterford. It consists of several good streets, a market-house, court-house, gaol, church, Roman Catholic chapel, and other public buildings; and has a handsome bridge of twenty arches across the Suir. It is a town of ancient foundation, built previous to the first Danish irruption, and originally protected by walls. Oliver Cromwell demolished the castle and fortifications after he became master of the place. The government of the town is vested in a mayor, sheriff, recorder, two bailiffs, and a town-clerk; the living is an entire rectory in the diocese of Lismore and arch-diocese of Cashel. The town returns one member to parliament. The manufacture of woollens used to be carried on here, but is now nearly extinct. A factory for weaving cotton has recently been established. There is a large carrying-trade of agricultural produce from this place to the seaport of Waterford, by means of the river Suir. The tide, which flows a little higher than the town, facilitates the inland navigation. Clonmel is a permanent military station, and the assize-town of the county of Tipperary. There are some extensive breweries and distilleries in Clonmel and the neighbourhood. The town is also head quarters for Mr Bianconi's extensive car establishment, and altogether has the air of a thriving district. Population of the parish 20,035, of which 17,838 are in the town. Lawrence Sterne was a native of Clonmel.

CLOWES, JOHN, M. A., rector of St John's church, Manchester, a zealous apostle of the doctrines of Emanuel Swedenborg, was born in Manchester, Oct. 20, 1743, O. S., the fourth child of Joseph Clowes, Esq., barrister, who for many years practised in that town and its neighbourhood, and Katherine, daughter of a respectable clergyman named Edwards, rector of Llanbedar, near Ruthin, in Wales. He was educated at the grammar school of Salford; and at the age of eighteen was entered a pensioner of Trinity college. In the year 1766, when he took his degree, he was the eighth wrangler on the Tripos paper, proving that he was no ordinary proficient in mathematical attainments; and that he was equally distinguished as a classical scholar, is shown by his gaining one of the two prizes given by the members of the university to the middle bachelors, for the best dissertations in Latin prose; and again, the following year, when he was senior bachelor, the first prize for a similar dissertation. In the midst of this career of academical distinction, the church of St John, Manchester, then building at the sole expense of Edward Byrom, Esq., was offered him by the patron, which he accepted; and he continued its rector, refusing more than one offer of high preferment in the church, for the term of sixty-two years.

In the spring of the year 1773, he became acquainted with the theological writings of the hon. Emanuel Swedenborg. "The delight," he said, "produced in his mind by the first perusal of the work entitled '*Vera Christiana Religio*,' no language could fully express;" and from that hour he dedicated all his energies to the publication of the doctrines, both in the pulpit and by the press. For many years he was employed in translating them from the original Latin; and as each volume was translated, it was printed by a society established in Manchester under his auspices. This society led to the formation of another in London, which is still actively and busily engaged in printing and circulating the writings of the hon. Emanuel Swedenborg.

The literary labours of Mr Clowes were not, however, confined to translations; for he published at different times many other works on subjects connected with religion and philosophy, and all of them agreeing with the views of his favourite author; in whose sentiments he, to the last, entirely acquiesced. His manly and explicit avowal of these sentiments produced opposite effects. While in some it excited the spirit of persecution, in others it was the subject of approbation and delight. Such was the opposition at one time by a few of his parishioners, that secret attempts were made to dispossess him of his living; but the applications which were made for this end were rendered abortive by the bishop of his diocese, Dr Porteous, from his lordship's conviction of his virtues and piety; and his worst enemies in a few years were changed into admiring friends. Much obloquy was cast upon him in consequence of his retaining his living after his adoption of sentiments not in unison with the articles of the established church; but all this originated in perfect ignorance of the man, and of the motives of his conduct. It was not the emoluments of the church that bound him to the establishment, but the supposition that he could be more generally useful in the station which he was called to fill in the order of providence. He professed also a remarkable and strong attachment to the forms of the establishment. At one time he enjoyed sanguine but delusive expectations, that his opinions would be universally adopted in the established church, and he supposed that he should be able to bring in all the stray sheep into his fold; but he lived long enough to see that this was a hasty and a false conclusion. He certainly was the instrument by which this class of Christians became sufficiently numerous to form a separate denomination. During his lifetime they consisted of two parties, separatists and non-separatists. Those who attached themselves to the church of England, under the title of non-separatists, lost in him their [illegible] and leader. To his labours they, however, are indebted for the diffusion of those opinions not only in this country, but throughout Europe, [illegible] America, and in numerous parts of the world. [illegible] Swedenborg is to be considered as the founder of the sect, Mr Clowes, after him, must be considered as his chief apostle.

During the latter years of his life he resided wholly at Warwick, blessing, to the last moment of his consciousness, those around him, and blessed by all who came within the circle of his influence. He died May 29, 1831. His funeral took place on the 9th of June.

The following is a list of Mr Clowes's publications:—"An Affectionate Address to the [illegible] of the United Kingdom of Great Britain and [illegible]land on the Theological Writings of Emanuel Swedenborg." 8vo. "Dialogues on the [illegible] Design, and Evidence of the Writings of the [illegible] Emanuel Swedenborg, with a brief account of some of his Philosophical Works." 12mo. [illegible]

"Letters to a Member of Parliament on the Character and Writings of Baron Swedenborg; containing a full refutation of all the Abbé Barruel's calumnies against the hon. Author," 2d edition, 8vo. 1799. "A Dialogue between a Churchman and Methodist on the Writings and Opinions of Baron Swedenborg," 8vo. "A few plain Answers to the Question, 'Why do you receive the testimony of Baron Swedenborg?'" 12mo. 1806. "Letter to the Christian Observer," in defence of the same, 8vo. 1807. "Letters to a Friend on the Divine Person and Character of Jesus Christ," 8vo. "On Mediums, their Divine Origin and important Uses, especially in the Regeneration and Salvation of Mankind," 8vo. 1814. "Pure Evangelical Religion Restored," 8vo. "The Spiritual Sum; its existence and operation proved from Scripture and Reason," 8vo. "The Parables of Jesus Christ explained," 18mo. 1816. "The Miracles of Jesus Christ explained," 18mo. 1816. "Scripture Histories, selected from the Old Testament," 18mo. 1817. "The true end and design of the Holy Sacrament," 12mo. "Letters to the Rev. John Grundy on the Unitarian Controversy," 8vo. 1817. "A Letter to the Rev. W. Roby on some passages in his Lectures," 8vo. 1820. "A second Letter, to the same, in reply to his pamphlet entitled, 'Anti-Swedenborganism,'" 8vo. 1821. "The Gospel according to Matthew, translated from the original Greek, and illustrated by extracts from the hon. Emanuel Swedenborg, 1819; St John's Gospel, on the same plan, 1819; St Luke's, 1824; and St Mark's, 1827." "The two Heavenly Memorialists; or Love and Truth stating to the Christian World their peculiar distresses, and imploring relief," 8vo. 1818. "On the two Worlds, the Visible and Invisible, their nearness to connection and operation on each other," 8vo. 1819. "A Treatise on Opposites, their nature, origin, and uses, as affecting both the Natural and Spiritual Life of Man," 8vo. 1821. "Christian Temper," 8vo. 1822. "The Twelve Hours of the Day," 8vo. 1823. "On Delights, their Origin, Variety, Uses, and Ends," 8vo. 1824. "Letters to a Friend on the Human Soul, its Immateriality and Immortality," 8vo. 1825. "Letters on the Human Body," 8vo. 1827. "On Science, its Divine Origin, Operation, Use, and End," 8vo. 1828. "Sermons preached at St John's church Manchester," 2 vols. 8vo. "Sermons on the Call and Deliverance of the Children of Israel out of Egypt," 8vo. 1803. "Sermons on the Parable of the Marriage of the King's Son," 8vo, 1812. "Short Dialogues on Creation and Redemption," 18mo. 1820. "Sermons on the Lord's Prayer and Ten Commandments," 8vo. 1821; on the Beatitudes, 8vo. 1825; on the Parable of the Ten Virgins," 8vo. 1828. "Religious Instruction for Youth," 2 vols. 18mo. "Family Prayers," 18mo. To which might be added a great variety of single sermons; and a translation from the Psalms, with notes and practical illustrations.

CLOYNE; a market-town of Ireland, and the seat of a diocese, is situated in the county of Cork, fourteen miles E. by S. from Cork, and 126 S.W. by W. from Dublin. It stands at a short distance from the eastern shores of Cork harbour, and is described as straggling and miserable; it consists principally of one street, the houses of which are of an inferior description. It is a place of considerable antiquity, as is likewise the bishopric of which it is the seat, its cathedral having been founded by St Colman, in the sixth century. The old name of the town is *Cluaine*, which signifies in Irish "a cave," and it is supposed to have been thus called, in consequence of the number of natural caverns and subterranean passages existing in the limestone-rock, of which the district is composed. Population of the town 2227; of the parish of Cloyne, 6410.

The chief object of interest at Cloyne is its *Round Tower*, one of those monuments of antiquity concerning whose origin and use so much darkness and perplexity exist, being variously supposed by different classes of antiquaries to have been,—the abodes of solitary anchorites,—the receptacles of a "sacred fire," worshipped by the primitive inhabitants of Ireland, after the fashion of the east,—places of temporary penance, — watch-towers erected by the Danes,—steeple-houses, and belfries.

The Round Tower at Cloyne stands in the street, on the side opposite to the church, and, as usual, near its western front. This singular structure sustained considerable damage from lightning in the middle of the last century; its height is stated to be ninety-two feet, and the thickness of its wall forty-three inches.

Adjoining the town is the bishop's palace, a plain edifice, which was built in the early part of the last century by bishop Crowe. It stands in a picturesque demesne, in which are the entrances to some of the natural limestone caverns abounding in this district. The ancient name of this spot was *Monelusky*, or "Field of Caverns;" and the names of the neighbouring fields and grounds, says Sir R. C. Hoare, "speak the savageness of this place in former times." Thus *Knocknamodree* is the "Hill of the Gray Dog, or Wolf;" *Park na Drislig*, the "Field of Briars;" *Monecranisky*, the "Meadow of the Wild Boars," &c. On the north of the town is a hill called *Bohermore*, or the "Great Highway," from a tradition that a road passed over it from the sea in the south to the sea on the north of the kingdom.

CLUTTERBUCK, Robert, B. A., F. S. A., a deputy lieutenant and magistrate for Hertfordshire, and author of the history of that county, was born at Watford, June 2, 1772. At an early age he was sent to Harrow school; and he continued there until he was entered as a gentleman commoner of Exeter college, Oxford. He subsequently took the degree of B. A.; and then entered at Lincoln's inn, intending to make the law his profession: but his ardour in the pursuit of chemistry, and in painting (in which he took lessons of Barry), induced him, after a residence of several years in London, to abandon his original plans. In the year 1798, he married Marianne, the eldest daughter of Colonel James Capper, of the Hon. East India Company's service; and, after a few years' residence at the seat of his father-in-law, Cathays, near Cardiff in Glamorganshire, he took possession of his paternal estate at Watford, where he continued to reside until his death. He there succeeded his father as a magistrate; and the impartiality and integrity with which he executed the duties of that arduous office, will be long remembered and appreciated by the inhabitants of Watford and its vicinity. During the intervals of these public duties, Mr Clutterbuck employed his active and well arranged mind in collecting materials for a new edition of Chauncy's History of Hertfordshire. These intentions he publicly announced in the Gentleman's Magazine, in 1809, but finding his manuscripts greatly accumulated, and having fortunately purchased, in 1811, the genealogical collections for Hertfordshire made by the late Thomas Blore, Esq., F.S.A., he formed the resolution of publishing a completely new history of his native county; making such use only of Chauncy's materials as was to his purpose. In this object he steadily persevered for eighteen years; and the result was an elegant and complete history, in three folio volumes, which will always preserve his name in honourable connection with his native county. The first volume was published in 1816; the second appeared in 1821; and the third was published in 1827. The plates in this work have scarcely been surpassed in any similar publication, whether we consider the appropriateness of the embellishments, or the beauty and fidelity of their execution. Mr Clutterbuck himself possessed, as a draughtsman, the hand of a master; several of the plates were from sketches of his own: but his knowledge of art also enabled him to employ with great judgment the very first artists in their particular lines. Mr Clutterbuck died suddenly at Watford, May 25, 1831.

COAL, (*a*.) Soon after the Revolution, in 1688, a duty was imposed on coal brought coastwise into the port of London, in addition to the municipal charges with which it was burdened. During the last war, it was as high as 9s. 4d. per chaldron; but was reduced to 6s. in 1824. There was a drawback allowed on coal sent coastwise to Cornwall for the use of the mines. This drawback amounted, in 1829, to £16,148. There was no duty on coal sent coastwise from one part of Scotland to another; and the duty on that exported to Ireland was only 1s. 7½d. per ton. After having, in the interval, undergone some modifications, the whole of these duties were totally abolished in 1831. The total sum received for the duty on coals amounted, in 1829, to £1,021,862; of which London contributed £464,599; Norfolk, £83,564; Kent, £52,549; Devonshire, £42,784; Hampshire, £37,813; Sussex, £36,295; Essex, £30,881; making, with other maritime counties, £847,266. In the same year, the duty on coal exported to Ireland amounted to £74,050. The chief ports of shipment were Whitehaven, Liverpool, Newport, Swansea, Irvine, Ayr, and Glasgow. Up to August, 1831, the duty on coal exported to British possessions was 1s. 6d. per chaldron, and to foreign countries 17s. per chaldron, Newcastle measure. (53 cwts.) Since that year, the duty on coal sent to foreign countries has been reduced to 3s. 4d. per ton; and on small coals 2s. A large increase in the exportation of coal has followed this measure. Ships that formerly used to leave this country with ballast, now take coal as a profitable cargo. Nor can this measure be considered injurious as hastening the exhaustion of the mines; for it is calculated, that in South Wales alone, there is a supply of coal sufficient to meet the present demand of the empire for 2000 years. In 1836 upwards of two and a quarter millions of tons of coals were shipped coastwise from Newcastle; and in 1837, the number of tons was 2,385,192, being an increase of 110,424 tons on the former year. There were also exported to foreign countries and British settlements in 1836, 411,697 tons, and in 1837, 471,150 tons, being an increase of 59.453 tons, and making the total quantity in 1836, 2,686,465 tons, and in 1837, 2,856,342, approaching in round numbers to nearly three millions of tons of coals per annum shipped from the river Tyne.

COBBETT, William, a celebrated political writer, who, in the course of his career, distinguished himself as a powerful advocate of the extreme principles, first of Toryism, and afterwards of Radicalism, was the son of a farmer and publican at Farnham, in Surrey, who occupied a house still standing, beside the river Wey, which has been known for eighty years past as "The Jolly Farmer." It is believed that his grandfather also occupied the same house. As he never appeared to be certain of his own age, his sons procured an extract from the register of Farnham, by which it appeared that the four sons of his father, George, Thomas, William, and Anthony, were christened on the 1st of April, 1763; and as Anthony was the youngest son, and William was the third, it is inferred that he was born one year before he was christened. The eldest brother was a shopkeeper, the second, a farmer, and the youngest, a soldier in the East India Company's service, and afterwards celebrated for his pugilistic prowess. In his early life, William was occupied upon his father's farm, and in the intervals of his labour was taught the ordinary accomplishments of reading, writing, and arithmetic. "Towards the autumn of 1782, (he says) I went to visit a relation who lived in the neighbourhood of Portsmouth. From the top of Portsdown I, for the first time, beheld the sea, and no sooner did I behold it than I wished to be a sailor." The next day he went on board the Pegasus man-of-war; but both the captain and port-admiral, suspecting him to be a runaway, declined his services, and persuaded him to return home, where he remained till the following spring, when he took a more effectual flight.

It was on the 6th of May, 1783, that, being prepared to go to Guildford fair, he was suddenly tempted to mount a London coach, and arrived at Ludgate Hill, with about half-a-crown in his pocket. During the journey, he fortunately made acquaintance with a hop-merchant, who, he found, had dealt with his father. This gentleman kindly took him to his house; and, after having in vain endeavoured to persuade him to return home, procured him a situation as copying clerk to Mr Holland, of Gray's Inn, where he remained for some months closely confined to the desk. This dry and incessant labour to a mind which must have ever been active and comprehensive, became at last irksome to him, and he quitted London for Chatham, where he enlisted. In doing so he proposed to join the Marines, still retaining his partiality for the sea; but by some misunderstanding he found himself entered into a regiment, the service companies of which were in Nova Scotia. During the year he remained at Chatham he improved his education in all its branches. He was soon raised to the rank of corporal; and at length sailed from Gravesend for Nova Scotia, where, however, he staid but a few weeks, the regiment being ordered to New Brunswick. Here his conduct appears to have been most exemplary; and he, no doubt justly, ascribes his farther promotion to the rank of sergeant-major, to his regularity, his early rising, and to the grand secret of husbanding time. In September, 1791, his regiment was relieved, and sent home. Shortly after his landing at Portsmouth, he obtained his discharge, receiving at the same time an honourable testimonial from his commanding officer. On obtaining his discharge from the army, Mr Cobbett brought charges of embezzlement against four officers of the late regiment, and obtained a trial by court-martial; but on the day of trial no accuser appeared: every inquiry was set on foot for Cobbett, but he was missing. Such an investigation as could be made without the presence of an accuser was made; and the court judged, "that the said several charges against these officers respectively are and every part thereof is totally unfounded." Whatever might have been Mr Cobbett's motives for so extraordinary a proceeding, certain it is that in the month of March he arrived in France. In his autobiography he says,—"I went to France in March, 1792, and continued there till the beginning of September following, the six happiest months of my life. I met every where with civility, and even hospitality, in a degree that I had never been accustomed to. I did intend to stay in France till the spring of 1793, as well to perfect myself in the language, as to pass the winter at Paris. I had actually hired a coach to go thither, and was even on the way, when I heard at Abbeville that the king was dethroned, and his guards murdered. This intelligence made me turn off towards Havre-de-Grace, whence I embarked for America."

He landed at New York in October, 1792, and commenced his career as an author by an attack on Dr Priestley, who emigrated to America in 1794. The title of this attack was originally intended to be, "The Tartuffe detected; or, Observations on the Emigration of a Martyr to the Cause of Liberty," but on the remonstrance of the publisher, the first four words were omitted. The "Observations" formed the first of that celebrated series of papers to which Cobbett affixed the signature of *Peter Porcupine;* and which he afterwards continued under different heads, to an extent which enabled him to gather them into twelve volumes, in which form they were republished in England, in May, 1801. The publications which immediately followed the "Observations" were entitled, "A Bone to gnaw for the Democrats:" "A Kick for a Bite:" "A Bone to gnaw for the Democrats; second Part;" "Plain English addressed to the people of the United States:" "The New Year's Gift;" and "The Prospect from the Congress Gallery." Having quarrelled with his publisher, Mr Cobbett, in the spring of the year 1796, took a house in Second Street, Philadelphia, for the purpose of carrying on the bookselling business himself. The bold anti-republican sentiments which he had already avowed had rendered the name of Peter Porcupine sufficiently odious in America; and before he opened his shop, he himself states, "I put up in my windows, which were very large, all the portraits that I had in my possession of kings, queens, princes, and nobles. I had all the English ministry; several of the bishops and judges; the most famous admirals; and, in short, every picture that I thought likely to excite rage in the enemies of Great Britain." Here he continued writing boldly and virulently. His works were all attacks, and most of them were personalities; but their strong bias was always against democracy, and in favour of moral and political order. He now changed and divided according to whim the subject of the Porcupine papers, although he still retained the signature of Peter Porcupine, as his *nom de guerre*. The second series of pamphlets which he penned under this *sobriquet* he published weekly, with the title of the "Political Censor." He then dropped that, and brought out a daily paper, called "Porcupine's Gazette." The sale of "Porcupine's Gazette" was very considerable: at one time the number of subscribers amounted to between two and three thousand. Owing to an article which appeared in it relative to the king of Spain and his ambassador, a prosecution was commenced against Cobbett for a libel, in the supreme court of Pennsylvania. In 1797, he was again charged with libel, on which occasion he gave surety, himself and two others, in the sum of 4000 dollars, to keep the peace, and be of good behaviour. Having shortly after forfeited his recognisances, a civil process was issued for the recovery of the 4000 dollars, but the execution was suspended. A more overwhelming blow remained, and one which, in its ultimate effects, drove Cobbett from America. Dr Rush, a physician of Philadelphia, brought an action against him for slander. Finding that he had made Philadelphia too hot to hold him, Cobbett removed to New York. He was found guilty: damages, 5000 dollars. Two days after the trial he was arrested at New York for that sum; the whole amount of which was, however, paid by a subscription raised among English gentlemen. The "Rushlight" was the last work from Mr Cobbett's pen which appeared in America. On the 1st of June, 1800, he sailed from New York for England.

Mr Cobbett's writings had attracted the favourable notice of the Anti-jacobins in England, with some of whom he had been in correspondence; and on his arrival in England he started the "Porcupine," a daily paper, in which he warmly supported Mr Pitt. It had very indifferent success, however; chiefly, it is said, from mismanagement. Nor was Cobbett more successful in the bookselling business, which he also attempted in Pall Mall, under the sign of "The Bible and Crown." On the discontinuance of the Porcupine he commenced his "Weekly Register;" which for upwards of thirty years was the vehicle of his opinions and feelings. In the course of its long progress, the character of the work underwent great changes, as did its plan and arrangement. It originally comprised a report of the parliamentary debates; but that was dropped at the end of the fourth volume. One main object of the work was to collect all public papers, and other official documents, to whatever nation relating. This for some time was carefully adhered to; but latterly state-papers formed a very subordinate part of the Register. From the first, it was the power of the editor's pen which imparted to the Register its principal value, and gained for it its great popularity.

Cobbett commenced his career as a public writer in England under very favourable circumstances. He was an Ultra-tory, was powerfully patronised by the ministry, and enjoyed the confidence of some of the most eminent men of the day. Mr Windham declared in his place in the House of Commons that a statue of gold ought to be erected to him. His letters on the subject of the treaty of Amiens produced a great sensation both here and on the Continent. It has been said (we know not with what truth), that Mr Pitt refused to meet Mr Cobbett at Mr Windham's table, and that the resentment which he felt at that circumstance was the cause of the great change which subsequently took place in Mr Cobbett's political views. However that may be, it is certain that some articles which appeared in the Register during the year 1803 drew upon the editor the unwished-for attention of the Attorney-General. The alleged libels were upon the Earl of Hardwicke, then holding the office of lord lieutenant of Ireland, and others. The trial came on before Lord Ellenborough and a special jury, on the 24th of May, 1804. The jury returned a verdict of guilty, and Cobbett was fined £500. Two days after, an action for damages instituted against Cobbett by Mr Plunket, solicitor general for Ireland (now Lord Plunket), was also tried at Westminster. The alleged libel in this case was part of the same article that formed the subject of the former trial; and a verdict was recorded with £500 damages. From this period a gradual change may be discerned in the tone of Cobbett's political disquisitions: from being a hearty church and king man, he became one of the foremost of radical reformers.

For some years Cobbett was a grievous thorn in the side of the ministry. At length, however, an opportunity appeared to have arrived for putting him to silence. His remarks in the Register of the 10th of July, 1809, on the flogging of some local militia-men at Ely, under the *surveillance* of a German regiment, drew upon him a government prosecution. The information was tried on the 15th of June, 1810, by a special jury, and Cobbett was found guilty. On the 9th of July he was brought up for judgment, and sentenced to be imprisoned for two years, to pay a fine of £1000 to the king, and at the expiration of the two years to give security for his good behaviour for seven years, himself in £3000, and two securities in £1000 each. The fine was paid by a subscription of his friends; but Cobbett suffered the whole term of imprisonment to which he had been sentenced, and this incarceration he never forgot or forgave. It increased the bitterness of his feelings against the party who had the means of inflicting it. On his liberation, his activity seemed to have received a fresh stimulus. He sought for every possible means of annoying those who sat at the helm of the state. He reduced the price of his "Register," and called into existence that "Twopenny Trash," the sale of which is said to have reached the unprecedented number of 100,000, but which ultimately led the government to procure the passing of the much talked of Six Acts. Mr Cobbett always asserted that these acts were passed for the express purpose of silencing him. He did not, however, wait for their operation, but in April, 1817, made a timely flight to America. There he remained till the latter end of the year 1819. During a part of his stay in that country he travelled with a view to the acquirement of agricultural information, and the result was the publication of the work which he entitled "A Year's Residence in America." Meanwhile he was otherwise industrious. He continued to annoy the ministry at home by the publication of his wide-spreading twopenny Register. This he composed in America, and regularly transmitted to England. In the year 1819, the act which had driven him into exile was repealed, and Mr Cobbett returned to his native land, bringing with him the bones of Tom Paine.

On his arrival in England, Mr Cobbett added to his existing embarrassments by commencing a daily newspaper—a fearful undertaking for a man without capital, and which ended as might have been expected. After a career of about two months, during the best part of the newspaper year, it was relinquished with considerable loss. He was subjected also to other inconveniences. Mr Cleary brought an action against him for libel; Mr Cobbett defended himself with his usual ability, and, although the damages were laid at £3000, the jury gave only 40s. In an action brought against him a week after by Mr John Wright, his late partner in the Register, &c., for three distinct libels, he was not so fortunate; Mr Wright obtained a verdict, with £1000 damages.

After his return to England, renewing his attention to agriculture, Cobbett took a farm at Barn Elms, in Surrey, where he attempted to grow several plants and trees indigenous to America, and to introduce Indian corn as a staple article of English produce. To further his views, he published a Treatise on Cobbett's Corn; printed a number of his Register on paper made from the husks, and established depôts for the sale of its flour and bread. The project, however, failed: he resigned, after a few years, his farm at Barn Elms, and returned at last to the county from which he came, where he rented of Col. Woodroffe the farm of Normandy, consisting of not more than 12 acres, about seven miles from Farnham.

In 1820 he made an unsuccessful attempt to be returned member for the city of Coventry. In 1826 he made another attempt to enter parliament. The borough chosen for this experiment was Preston; but he was again unsuccessful. In 1825, he published "The History of the Protestant Reformation in England and Ireland." In this work he declares Luther, Calvin, and Beza to be the greatest ruffians that ever disgraced the world, and condemns their labours to contempt and derision. Of course, the Romish priesthood had the work translated into all the languages of the continent. In 1829 was printed his "Advice to Young Men and Women;" a book abounding in excellent maxims for conduct in life. About this period he delivered, at several places throughout the empire a course of lectures on political economy. An account of his tour in Scotland, which country he embraced in his travels, was published in a separate volume.

In 1831, Mr Cobbett was, for the eighth time in his life, brought into a court of law on a charge of libel. On the 7th of July, in that year, he was indicted before lord Tenterden and a special jury, for "the publication in the 'Weekly Political Register' of a libel, with intent to raise discontent in the minds of the labourers in husbandry, and to excite them to acts of violence, and to destroy corn-stacks, machinery, and other property." Mr Cobbett defended himself in a speech which occupied six hours. The jury, after mature consideration, could not agree to a verdict; six being of one opinion, and six of another: they were consequently discharged.

On the dissolution of parliament, after the passing of the Reform Bill, in 1832, Mr Cobbett received an invitation to become a candidate to represent Manchester. This he accepted, but almost immediately afterwards was presented with a similar invitation from Oldham. This he accepted also, his reason being, to use his own words, because "the people knowing how difficult it would be to carry an election for Manchester by mere voluntary support, came to the resolution to secure my return for Oldham." At Manchester, he was at the bottom of the list; but at Oldham he was triumphant. Mr Cobbett was now in parliament. The attainment of a seat there had long been the object of his fondest ambition; and the master wish was at length gratified. He devoted himself to his new duties with the energy by which through life he had been characterised; and, with the single exception of a tour to Ireland (undertaken for the purpose of seeing with his own eyes the state of things in a country which had afforded so fertile a field for political controversy), he suffered no other public engagement to occupy his mind. His parliamentary career, however, displayed little of the originality which was looked for from the author of the "Political Register," and was on the whole marked by a calmness and moderation hardly to be expected. His manner was colloquial and unaffected; and on several occasions he made considerable impression on the house. At the general election which followed Sir Robert Peel's accession to the helm of power, he was again returned to Oldham, and resumed his duties in the new parliament, but soon after he was seized with inflammation of the throat, of which he died in June 1835, aged, as it is calculated, seventy-three. He left four sons and three daughters. He had seven other children, who died young.

Some of Mr Cobbett's publications have been already mentioned. His other works (besides political pamphlets) were,—"The Emigrant's Guide," in ten letters; "Cobbett's Poor Man's Friend;" "Cottage Economy;" "Rural Rides;" "Village Sermons," "An English Grammar," in letters to his son; "A Grammar to teach Frenchmen the English Language;" "A Translation of Marten's Law of Nations;" "A Year's Residence in America;" "Parliamentary History of England to 1803," in twelve volumes; and "Debates from 1803 to 1810," in sixteen volumes, royal octavo. When to these are added "Porcupine's Works" in the United States, from 1793 to 1801, in twelve volumes, and the "Political Register" from 1802, a due estimate may be made of the extraordinary quantity of matter which he passed through the press.

COCA, a plant of South America, from six to eight feet high, somewhat like a blackthorn, which it resembles in its numerous small white blossoms, and the lively bright green of the leaves. These leaves, which are gathered and carefully dried, are an article of brisk trade, and the use of them is as old as the first knowledge of the history of Peru. It is a stimulant, which acts upon the nerves in the same manner as opium. Unhappily, the use of it has degenerated into a vice which seems incurable. The Indians of America, especially those of the Peruvian Andes, notwithstanding the civilization which surrounds them, have a vague sense of their own incurable deficiency, and hence they are eager to relieve themselves, by violent excitements, from such melancholy feelings. This accounts, not only for the use of the coca, but also for the boundless love of spirituous liquors, which possesses scarcely any other people in the world in an equal degree. To the Peruvian, the coca is the source of the highest gratification; for under its influence his usual melancholy leaves him, and his dull imagination presents him with images which he never enjoys in his usual state of mind. If it cannot entirely produce the terrible feeling of over-excitement that opium does, yet it reduces the person who uses it to a similar state, which is doubly dangerous, because, though less in degree, it is of far longer duration. This effect is not perceived until after continued observation; for a new comer is surprised indeed at the many disorders to which the men of many classes of the people are subject in Peru, but is very far from ascribing them to the coca. A look at a determined coquero gives the solution of the phenomenon; unfit for all the serious concerns of life, such a one is a slave to his passion, even more than the drunkard, and exposes himself to far greater dangers to gratify his propensity. As the magic power of the herb cannot be entirely felt, till the usual concerns of daily life, or the interruptions of social intercourse, cease to employ the mental powers, the genuine coquero retires into solitary darkness or the wilderness, as soon as his longing for this intoxication becomes irresistible. When night, which is doubly awful in the gloomy forest, covers the earth, he remains stretched out under the tree which he has chosen; without the protection of a fire near him, he listens with indifference to the growling of the ounce; and when, amid peals of thunder, the clouds pour down torrents of rain, or the fury of the hurricane uproots the oldest trees, he regards it not. In two days he generally returns, pale, trembling, his eyes sunk, a fearful picture of unnatural indulgence. He who has once been seized with this passion, and is placed in a situation that favours its development, is a lost man.

COCKERMOUTH; a borough and market-town in the county of Cumberland, situated twenty-six miles S.W. from Carlisle, at the mouth of the Cocker, which divides it into two halves immediately before its junction with the Darwent. A bridge of one arch unites the two divisions. The Darwent flows on the north of the town, and a bridge of two arches connects the hamlet of Goat, which lies on the north side of the Darwent, with Cockermouth. The trade of this place is considerable, particularly in cottons, linens, and woollen goods, for all of which there are extensive manufactories in the town or its immediate neighbourhood. It is also noted for its excellent tanworks, and its extensive manufacture of hats. This town has enjoyed the privilege of representation since the year 1640; and even by the Reform Bill, it still sends two members to parliament, although its population in 1831 was only 4536. Were population the rule of right in this matter, Glasgow, by the same ratio, would send a hundred members.

CODEINE, a vegetable alcali, discovered in opium by Robiquet. It is soluble in water, bitter, and narcotic; but loses much of its energy by combination with acids. Its salts, however, in large doses, produce excitement, followed by depression and general itching. Codeine has been employed on the continent as an anodyne with success; but it occurs in too small quantity ever to be extensively used. It is certainly one of the active principles of opium.

COINAGE (*a.*) The condition of the country in regard to the coined money in circulation during the early years of the present century was exceedingly unsatisfactory. Of silver coin issued from the Mint there was scarcely any. The shillings and sixpences that passed from hand to hand by common consent were almost all of them blank pieces of silver, intrinsically worth less than half the sums at which they were current. Guineas, half-guineas, and gold pieces of the value of seven shillings, were occasionally seen; but the rapid advance in the market-price of gold, at length effectually drove all coins of that metal from circulation. The place of guineas was supplied by bank notes, of the denominations of one and two pounds; and, to provide the community with means for carrying on the smaller transactions of daily traffic, different expedients were successively adopted. At first, Spanish dollars stamped with a diminutive impress of the king's head were issued by government at the rate of 4s. 6d. each; but these soon disappeared, and the bank of England was authorised to issue "tokens" and put into circulation pieces of the respective nominal values of 1s. 6d., of 3s., and of 5s. The last of those tokens consisted of Spanish dollars, the original impress upon which was removed, and a different one given by means of a powerful press. The smaller tokens—those of 3s. and 1s. 6d.—were intrinsically so far below their nominal value, that they remained in circulation until called in; but the dollars, or five-shilling tokens, were so much nearer in value to their nominal rate, that, on a further advance in the market-price of silver bullion, it became necessary to raise their nominal value 10 per cent., causing them to pass for 5s. 6d. each.

An account of the Value of Gold and Silver Moneys coined at the Mint in each Year from 1801 *to* 1836.

Years.	Gold.	Silver.	Total.
	£	£	£
1801	450,242	53	450,295
1802	4[illegible]7,018	62	437,080
1803	5[illegible]6,444	72	596,516
1804	718,397	77	718,474
1805	54 668	183	54,851
1806	405,105	Nil.	405,105
1807	Nil.	108	108
1808	371,744	Nil.	371,744
1809	2[illegible]8 946	115	299,061
1810	316,935	121	317,056
1811	312,263	Nil.	312,2 3
1812	Nil.	52	52
1813	519,722	90	519,812
1814	Nil.	161	161
1815	...	Nil.	Nil.
1816	...	1,805 251	1,805,251
1817	4,275,337	2,436,298	6,711,635
1818	2,862,373	576,279	3,438,652
1819	3,574	1,267 273	1,270,817
1820	949,516	847,717	1,797,233
1821	9,520,758	433,686	9,954,444
1822	5,356,787	31,430	5,388,217
1823	759,748	285,272	1,045,020
1824	4,065,075	282,070	4,347,145
1825	4,580,919	417,535	4,998,454
1826	5,896,461	608,606	6,505,067
1827	2,512,636	33,020	2,545,656
1828	1,008,559	16,288	1,024,847
1829	2,446,754	108,260	2,555,014
1830	2,387,881	151	2,388,032
1831	587,949	33,696	621,645
1832	3,730,757	145	3,730,902
1833	1,225,269	145	1,225,414
1834	66,949	432,775	499,724
1835	1,109,718	146 665	1,256,383
1836	1,787,782	497,719	2,285 501

With the exception of an insignificant amount of small coins, struck for the purpose of distribution, as alms by the crown, and known as Maunday money, from the circumstance of its being given away on Maunday Monday, there was not any silver coinage by the state in the present century until 1816.

Copper coin is issued from the Mint at the rate of £224 per ton, or more than 100 per cent. above its market value; there can hardly be expected, therefore, to arise any temptation for its conversion to any other purpose. The copper coinage which was issued in 1797, in place of the old defaced tower halfpence, was of the intrinsic value of £149 6s. 8d. per ton; but as the market value of the metal rose in 1806 to £200 per ton, it has since then been thought advisable to adopt the rate above mentioned. The value of copper coin issued from 1815 to 1836, has been as follows:—

	£	s.	d.
1815 to 1820	[illegible]		
1821	[illegible]	0	0
1822	[illegible]	0	0
1823	[illegible]	0	0
1824	[illegible]		
1825	[illegible]	0	0
1826	[illegible]	[illegible]	0
1827	[illegible]	0	0
1828	[illegible]	0	0
1829	[illegible]	0	0
1830	[illegible]	0	0
1831	[illegible]	0	0
1832	[illegible]	0	0
1833	[illegible]		
1834	[illegible]	0	0
1835	[illegible]	0	0
1836	[illegible]	0	0
	£[illegible]	[illegible]	0

Previous to the copper coinage above mentioned, as having been made in 1797, the country was inundated from one end to the other by coins put into circulation as halfpence, and which were struck by tradesmen or other private adventurers. The encouragement to this course was found in the existing state of the small coinage. The halfpence put into circulation by private parties were some of them creditable specimens of the art of coining and all of them, although intrinsically below their nominal value, were yet considerably nearer to it than the halfpence otherwise circulating. When the state undertook, in 1797, to issue new copper coins, the circulation of these private tokens was prohibited.[*]

COLERIDGE, Samuel Taylor, an eminent poet, and distinguished philosophic *talker*, was the youngest son of the Rev. John Coleridge, vicar of St Mary Ottery, Devonshire, and Ann his wife, and was born in that parish, where he was baptized 30th December, 1772. His father died in the month of October, 1781, leaving his widow with a family of eleven children, of whom one, the Rev George Coleridge, eventually succeeded him at Ottery St Mary. A presentation to Christ's Hospital, London, was procured for the subject of this memoir from John Way, Esq., one of the governors, and the boy was admitted to that most excellent school on the 18th of July, 1782. His father had formerly been a schoolmaster at South Molton, and is said to have assisted Dr Kennicott in the collation of manuscripts for his Hebrew Bible: he published dissertations arising from the 17th and 18th chapters of the Book of Judges, and other works. Samuel must have been well prepared for school by his father; for the age of nine years is rather a late period from which to start for the honours of Grecian and university exhibitioner at Christ's Hospital,—honours which he obtained in other nine years.

On the 7th of September, 1791, Mr Coleridge was sent from Christ's Hospital, with one of the exhibitions belonging to that foundation, to Jesus College, Cambridge. Here both his residence and his studies were desultory and unacademical. He remained at Cambridge till October term, 1794,[†] when he quitted the university without cause assigned, and without taking a degree. The master and fellows of the college consequently made an order that his name should be removed from the college boards, unless he returned before the 14th of June, 1795; and the committee of Christ's Hospital, considering that their exhibitions are [illegible] by the general court, under a restriction that if the students absent themselves from college without permission, their allowance is to cease, and having further considered that the general example of a scholar of such distinguished abilities might be detrimental to the youth of the house, resolved, that his exhibitions, which had been paid to April, 1795, should be from that time withheld.

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[*] Porter's "Progress of the Nation."

[†] It is said in 'The New Monthly Magazine' that in the autumn of 1793, he enlisted in despair into the 15th regiment of dragoons, from which his discharge was soon procured by his friends.

It was in the long vacation of the year 1792 that he became acquainted with Mr Southey, then a student of Baliol College, Oxford; and the two young poets, both dazzled with the specious opening of the French revolution, commenced an enthusiastic friendship; and, in conjunction with others of the same way of thinking (or rather dreaming), struck out a scheme for settling themselves in the wilds of America, and for there having all things in common, which they called "establishing a genuine system of property." This vision they entitled *pantisocracy;* and it was with the eventual view of *realizing* it, that Mr Southey, in the year 1795, married a young lady of Bristol (his native place) of the name of Fricker, to whom he had been long attached, and that about the same time Mr Coleridge and a third poet and Utopian, Mr Robert Lovell, were respectively united to her two sisters. This project of emigration and pantisocracy, however, was never carried into execution. Mr Southey, on the very day after his secret marriage, obeyed his mother's uncle, by accompanying him to Lisbon for six months, travels of which the fruits were his pleasant letters from Spain and Portugal; and on his return quietly settled himself in Gray's Inn as a law-student. Mr Coleridge remained with his wife at or near Bristol.

In the previous winter of 1794—5 he had delivered there a course of lectures on the French revolution; having even before that published, in conjunction with Mr Southey, a hasty drama, called "The Fall of Robespierre." In the year 1795, appeared the "*Conciones ad Populum*, or Addresses to the People;" and in the year 1796 ten numbers of a weekly paper called "The Watchman."

It was at Nether Stowey, at the foot of the Quantock hills, in Somersetshire, in the summer and autumn of the year 1797, that Mr Coleridge wrote, at the desire of Mr Sheridan, the tragedy of "Remorse," which was, by his neglect, not brought upon the stage of Drury Lane theatre till the year 1813, when the property was under the direction of Mr Whitbread. During his residence at Stowey, he was in the habit of preaching every Sunday at the Unitarian chapel at Taunton, and was greatly respected by even the better class of his neighbours and hearers. Here, in June, 1797, his friends, Charles Lamb and his sister, visited him, and gave occasion to the sweet verses entitled, "This Lime-tree Bow'r my Prison;" and it was during his residence here that William Hazlitt became acquainted with him.

Mr Coleridge, in the years 1796 and 1797, published his first poetical volume, the second edition in conjunction with a few poems by his friends Charles Lamb and Charles Lloyd, just as Mr Southey had previously published his earliest poetical effusions bound up with those of his friend Mr Lovell. In 1796 was published separately the "Ode on the Departing Year," and in 1798 the "Fears in Solitude," "France, an Ode," and "Frost at Midnight." In the 1798 also appeared the first edition of the celebrated "Lyrical Ballads" of Mr Wordsworth and Mr Coleridge.

In the autumn of the year 1798, Coleridge, to whom his friends, Messrs Josiah and Thomas Wedgewood of Etruria, in Staffordshire, had generously granted an annuity of £100, (Mr Hazlitt says £150,) commenced his travels in Germany, accompanied by Mr Wordsworth. Of these travels the only records are contained in a few letters in "The Friend" (repeated in the "Biographia Literaria"); but the fruits of his German studies of men and books are apparent in every after-production of his mind and pen.

On his return from Germany, in the year 1800, he went to reside at Keswick, where his friend Mr Southey had, after filling for some time the situation of secretary to Mr Corry, the Irish chancellor of the exchequer, finally settled, Mr Wordsworth then living at Grasmere; and here his religious tenets, to use his own expression, found a final reconversion to the whole truth in Christ. He tells us, indeed, that even before this, while meditating, his heart had long been with the blessed Paul and the beloved John, though his head was with Spinoza. He now became convinced, both head and heart, of the doctrine of the divine trinity in unity.

In the year 1800 were published Coleridge's translation of Schiller's "Wallenstein," both the first and the second parts, and then "the harp of Quantock" was nearly silent for ever. In the year 1804 he made a voyage to Malta, on a visit to his friend Dr Stoddart, then king's advocate there. Sir Alexander Ball was then governor of that island, and was so greatly pleased with his genius and conversation, that during an occasional absence of the secretary to the government, he appointed Mr Coleridge to act in that office. We need not say that his talents lay in any other direction than that of office business; but he flattered himself that his mind could bend to the yoke, and the salary was £800 per annum. Notwithstanding the eulogium that he has written upon Sir Alexander in "The Friend," there was little congeniality of mind between the governor and his secretary. They did not agree, and the employment lasted in name and salary for about nine months only. Coleridge was altogether in Malta from May, 1804, to October, 1805. In his way home he passed through Calabria and Italy; and it is to be regretted that so few of his feelings on his visit to Rome are to be found recorded in his writings. In the years 1809-10, he issued from Grasmere a weekly essay, stamped to be sent by the general post, called "the Friend." This paper lasted for twenty-seven numbers, and was then abruptly discontinued; but the papers have since been collected and enlarged in three small volumes. In the year 1812, Coleridge, being in London, edited, and contributed several very interesting articles to, Mr Southey's "Omniana," in two small volumes. In 1813, the tragedy of "The Remorse" was acted and printed. In the year 1816, he published "The Statesman's Manual; or, the Bible the best Guide to political Skill and Foresight; a lay Sermon;" and in the following year, "A Second Lay Sermon, addressed to the higher and Middle Classes, on the existing Distresses and Discontents." In this year also appeared the Biographical Sketches of his Literary Life and Opinions, and his newspaper Poems re-collected under the title of "Sibylline Leaves." In the year 1816 likewise was published by Mr Murray, at the recommendation of Lord Byron, who had generously befriended the brother (or rather the father) poet, the wondrous ballad tale of "Christabel." In 1818, was published the drama of "Zapolya." In 1825, "Aids to Reflection, in the formation of a manly Character, on the several grounds of Prudence, Morality, and Religion; illustrated by select Passages from our elder Divines, especially from Archbishop Leighton." This is a very precious manual. And—to conclude the catalogue of his works—in 1830 he published a small volume "On the Constitution of the Church and State, according to the Idea of each, with Aids toward a right Judgment on the late Catholic Bill." In the year 1828, the whole of his poetical works, including the dramas of Wallenstein (which had been long out of print), Remorse, and Zapolya, were collected in three elegant volumes by Mr Pickering.

The latter years of Coleridge's life were made easy by a domestication with his friend Mr Gillman, the surgeon of Highgate Grove, and for some years the poet deservedly received an annuity from George IV. of £100 per annum, as an academician of the royal society of literature. Coleridge contributed one or two erudite papers to the transactions of this society. In the summer of 1828, he made the tour of Holland, Flanders, and up the Rhine as far as Bergen. For some years before his death he was afflicted with great bodily pain; and was on one occasion heard to say, that for thirteen months he had from this cause walked up and down his chamber seventeen hours each day. He died on the 25th of July, 1834, having previously written the following epitaph for himself:—

> "Stop, Christian passer-by! Stop, child of God!
> And read with gentle breast. Beneath this sod
> A poet lies, or that which once seem'd he—
> Oh, lift a thought in prayer for S. T. C.!
> That he, who, many a year, with toil of breath,
> Found death in life, may here find life in death!
> Mercy for praise—to be forgiven for fame,
> He asked and hoped through Christ. Do thou the same."

He was buried in Highgate church. He left three children, namely, Hartley, Derwent, and Sara. The first has published a volume of poems, of which it is enough to say that they are worthy of Mr Wordsworth's verses addressed to him at "six years old." The second son is in holy orders, and is married and settled in the west of England; and the poet's daughter is united to her learned and lively cousin, Mr Henry Nelson Coleridge, the author of "Six Months in the West Indies." This young lady had the good fortune to be educated in the noble library on the banks of the Cumberland Greta, where she assisted her accomplished uncle in translating from the old French the history of the chevalier Bayard, and from the Latin the account of the Abipones, or Equestrian Indians of South America, by the Jesuit Martin Dobrizhoffer; both of which works were published by Mr Murray.

COLLETTA, Peter, a Neapolitan general and historian, was born at Naples in 1775. He early applied himself to the study of mathematics, while his classical education was not neglected. In 1796 he entered the military service as an officer in the artillery, and was present during the disastrous campaign against the French in 1798. He served afterwards under the turbulent and short-lived republic, without being either a demagogue or a fanatic. His friends succeeded in saving him from the proscriptions that followed. Being, however, dismissed from the service, he found employment as a civil engineer in draining the marshes near the mouth of the Ofanto. When the French took possession of Naples, for the second time, in 1806, Colletta was reinstated in his rank, and employed at the siege of Gæta, and at the taking of Capri. He was afterwards sent by Murat, as Intendant, to Calabria, where he remained two years. In 1812 he was made a general, and director of the roads and bridges. Two of the finest roads in the neighbourhood of Naples were planned by him, and executed under his directions. In 1813, he was appointed chief of the engineer department. He accompanied Murat in his two campaigns of 1814-15, and after the reverses of the last, he was sent by him to the Austrian head-quarters, where he signed the capitulation of Cassalanza, by which Ferdinand was restored to the kingdom of Naples. He was continued in his employments by the restored government, which he served with loyalty. He kept entirely aloof from the plots and machinations that brought about the revolution of 1820. During the short period of the constitutional government he was sent as captain-general to Sicily, to restore order in that island, and was subsequently appointed minister of war: but the entrance of the Austrians, and the overthrow of the constitution, again and finally threw him out of employment, and drove him into exile along with many others, on account of their liberal opinions. After spending two years in the Austrian dominions, where he was treated with respect and attention by that government, he was allowed, on account of his health, to return to Italy in 1823. He took up his residence in Tuscany, and beguiled the tedium of exile, in his latter years by composing a history of the kingdom of Naples, which forms a most valuable addition to the stock of Italian histories, and may be considered as a worthy continuation of Giannone's history of Naples. It embraces the period from the establishment of the Spanish Bourbon dynasty on the throne of Naples, in 1734, to the death of Ferdinand I., in 1825. Colletta died in November, 1831.

COLMAN, George, "the younger," an English dramatic writer, and in his old days "licenser of plays," in which latter profession he was as remarkable for the severity of his decorum as his own writings were for their laxness, was the son of George Colman, the author of the Jealous Wife, and the translator of Terence, (for whom see body of work,) and was born in London, 21st Oct. 1762. After having passed through Westminster school, he was sent to Oxford, and afterwards to King's college, Aberdeen. At Aberdeen, young Colman published a little poem, entitled "The Man of the People," the hero of which was Charles Fox. He then finished a musical farce, in two acts, which he called "The Female Dramatist," and transmitted it to his father. This was brought out, at the Haymarket, anonymously, on the benefit-night of Jewell, the treasurer; but it was condemned. Undismayed by this failure, he proceeded to the composition of a three-act comedy. This was entitled "Two to One," and was the first of his publicly avowed dramas. It was sent to town early in 1783, was immediately accepted by his father, but was not performed until the season of 1784. Its success was very flattering, and it had a run. He returned to London in Jan. 1784. In August of the same year he went to Paris, in consequence of an odd commutation of his father's design to send him into Switzerland for a year or two. In Paris he remained six weeks, and then returned to commence the study of the law. He entered at Lincoln's Inn; but the drama had laid too fast hold of him to forego its fascinations; and he devoted to Shakspeare, and our early dramatic poets, the time and attention which he ought to have bestowed upon "Blackstone's Commentaries," or "Coke upon Littleton." Totally, therefore, eschewing the law and its dry details, he betook himself to dramatic writing, and availing himself of the facilities which the theatre afforded, mixed in the gay world to an excess that subsequently, we believe, cost him many years to recover from. In the latter part of the year 1784, he eloped with Miss Catharine Morris, and was married to her at Gretna Green. This affair was managed unknown to his father. At a subsequent period, the marriage was acknowledged; and the ceremony was repeated in Chelsea church. Many years afterwards, on the death of Mrs Colman, from whom he had been long separated, he married Mrs Gibbs, the celebrated actress.

Mr Colman was the author of many dramas, of every kind and grade, save and except, perhaps, tragedy; though he took flights in that way, but engrafted upon the stock, as Shakspeare has done, comic parts in prose; the loftier personages assuming the more dignified tone of blank verse. Of these "plays," as they were denominated, "The Iron Chest" is a memorable instance. On its first representation it was condemned; but after curtailment, it met with better success, and still continues upon the stock list of the acting drama. In consequence of the condemnation of this play, he ever afterwards added, "the younger" to his name; in order that the reputation of his father might not by possibility suffer by being confounded with his own. "Turk and no Turk," his second dramatic essay, proved to be a failure; whilst "Inkle and Yarico," became most extensively popular. These were followed by "Ways and Means," "Poor Old Haymarket," "The Mountaineers," "New Hay at the Old Market" (since cut down to "Sylvester Daggerwood,") "Blue Beard," "Feudal Times," "Poor Gentleman," "John Bull," "Who wants a Guinea?" "We fly by Night," "The Battle of Hexham," "Surrender of Calais," "Heir at Law," "Blue Devils," "Review," "Gay Deceivers," "The Africans," "Love laughs at Locksmiths," "X. Y. Z.," "Actors of all Work," with innumerable interludes, prologues, epilogues, &c., in which he was particularly smart and happy.

It is no easy task to criticise the merits of Mr Colman's comedies. They are satires on the past age, written at a time when there was more character in the gentry of our nation than we now meet with, and less effort made to disguise or smother personal peculiarities and external follies. The wit made the most of these; and the production of a new comedy was an important and delightful event to the town. The life and bustle of our author's writings will ever please, though the jokes were better applicable to the days of their birth; the frequent passages of sentimental morality and double-barrelled loyalty, which are now regarded as clap-traps, at the time they were written electrified the audience, and helped to keep the country from civil discord, and in satisfaction with itself.

Mr Colman was also the author of three poems, distinguished more by wit than by decorum, published under the title of "My Nightgown and Slippers," which he added to and republished under the title of "Broad Grins;" as also a volume of doggrel, called "Poetical Vagaries:" another, entitled "Vagaries Vindicated:" another, called "Eccentricities for Edinburgh;" and lastly, we believe, his "Random Records," in two volumes; being memoirs of his early life and times. Some of his farces were introduced to the public under the assumed name of Arthur Griffinhoof, of Turnham Green.

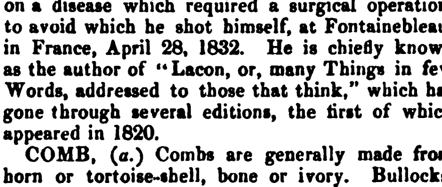
Mr Colman was in a high degree social, convivial, and intelligent; and his company was sought by men of all parties and all ranks, not excepting royal. Lord Byron speaks of his wit and repartee as being of the highest order. He died on Wednesday, the 26th of October, 1836, at his residence in Brompton Square; aged seventy-four years. His remains were deposited, on the 3d of November, in the family vault at Kensington church, where likewise rest the ashes of his grandfather, Francis Colman, and his father, George Colman.

COLTON, Charles Caleb, the author of "Lacon," a work abounding in many profound apothegms regarding human life, was graduated A.B. at King's College, Cambridge, in 1801; was afterwards chosen a fellow; took orders, and in 1818 obtained the vicarage of Kew and Petersham. He was noted for his eccentricities, irregularities, and inveterate attachment to gaming, which reduced him to beggary; and his excesses brought on a disease which required a surgical operation, to avoid which he shot himself, at Fontainebleau, in France, April 28, 1832. He is chiefly known as the author of "Lacon, or, many Things in few Words, addressed to those that think," which has gone through several editions, the first of which appeared in 1820.

COMB, (*a.*) Combs are generally made from horn or tortoise-shell, bone or ivory. Bullocks' horns, after the tips are sawed off, are roasted in the flame of a wood fire, till they are sufficiently softened. They are then slit up, pressed in a machine between two iron plates, and plunged into a trough of cold water by which they are hardened. A paste of quick lime, litharge, and water is used to stain the horn to resemble tortoise-shell. Tortoise-shell is steeped in boiling water to soften it, and then pressed between brass or iron moulds to receive the proper shape. After the horn or shell, bone or ivory, has received its outline shape and curvature, by files or fine rasps, the place of the teeth is marked with a triangular file, and then the teeth themselves are cut out with a double saw, composed of two thin slips of tempered steel, notched with very fine sharp teeth. These slips are mounted in a wooden or iron stock or handle, in which they may be placed at different distances to suit the width of the comb teeth.

Let A, fig. 1, represent the piece of horn or wood, out of which the comb is to be cut; it is of the exact size of the comb. B is the saw with its

Fig. 1.

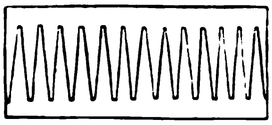


two unequal blades; the first cut of this saw has already made two nicks in the material, that by the longer blade to the full depth of the tooth, and that by the shorter to half the depth; the longer blade is now placed in the shallow nick, which it deepens to its full extent, while a third nick is made by the shorter blade: in this manner the whole of the teeth were gradually marked out, and were afterwards finished by means of files.

A much better mode of making combs is to fix upon a shaft or arbour in a lathe a series of circular saws, with intervening brass washers or discs to keep them at suitable distances; to set in a frame like a vice, in front of these saws, the piece of ivory or horn to be cut; and to press it forward upon the saws at an angle of forty-five degrees, by means of a regulated screw motion. When the teeth are thus cut, they are smoothed and polished with files, pumice stone and tripoli.

The manner in which combs are cut at present is an apt illustration of the advantage derived to manufactures and the arts by the invention of ingenious men, directed frequently by accident. About twenty years ago, the principal house in London for the sale of combs had received from abroad some patterns of ornaments, like the spikes and balls of coronets, to be attached to tortoise-shell combs. They gave the order to execute these to an ingenious artist of the name of Ricketts, who contrived a punch, by the successive pressure of which, on a thin piece of warm tortoise-shell, he cut out the pattern piece by piece; on disengaging the pattern from the other part, he observed to himself, "Here are two combs cut out of the material for only one." He improved on this hint, and constructed a machine in which he employed a cutter like a chisel, which, descending upon the shell, cut one side of a tooth at a time, and then by shifting the bed on which the shell was laid and moving it forward a short distance, the other of the tooth was cut: the result of this operation may be seen in fig. 2, which represents a piece of shell very little larger than necessary for one comb, but which, by this means, is made to produce two.

Fig. 2.

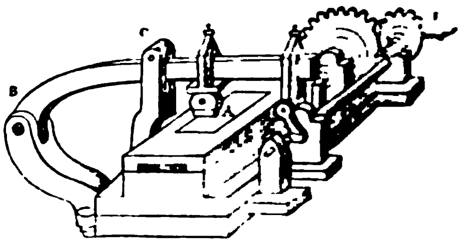


Various contrivances have been adopted to guide the direction of the cutter, so as to cause it to descend obliquely and at regular intervals; but this oblique action was next avoided by the employment of two cutters, or chisels, placed at an angle with each other, by means of which a perfect tooth is cut at one blow. The scales of tortoise-shell being much thinner on one edge than the other, were not so well adapted for this invention as horn, the thin edge not being thick enough for the back of the comb: but this can be remedied by soldering another piece of shell upon the thin edge; it is effected in this manner. The two surfaces to be united are nicely rasped and smoothed, placed between two thin boards, and submitted to the action of a screw-press. The press is put for some hours in boiling water and tightened from time to time, until at length a complete junction takes place.

Fig. 3.

The cutters are seen at A A, fig. 3; they are arranged in this manner:—*a a* are the edges of the chisels set at an angle by *c*, which is called the *filling-up piece*: *b* is a smaller chisel which cuts away the point of the tooth from the shell, to which it would otherwise be attached; but this small chisel only effects the operation on one of the combs: the opposite teeth are cut away by the bent ends *d d* of the longer chisels, which at each blow half separate two teeth.

Fig. 4.



The shell is firmly fixed beneath the cutter A and the engine acts in the following manner: B is a strong bar firmly jointed behind to the framework; it is kept steady by the loop C, and is moved downwards by means of the crank in front, carrying along with it its cutters upon the shell. This crank is moved by the handle and winch E and is so fixed that it brings down the cutter upon the shell at that part of the revolution of the winch, when the wheel with a few teeth which is fitted to its axis, is clear of the teeth of the larger wheel. As soon as the tooth is cut, the crank in its revolution raises the lever and cutter, and the teeth on the small wheel entering those of the larger, move the large wheel a part of a revolution. This large wheel is fixed to a screw which is attached to a sliding table, on which the tortoise-shell is placed; the screw is consequently turned a part of a revolution, and the shell and table thrust forward proportionately. The smaller wheel becomes again disengaged from the larger, the crank again brings down the cutter on the shell, and another tooth is cut, and this alternate action takes place until the two combs are cut out. Another piece of shell is supplied, and the movement of the handle of the winch being reversed, the shell and the table move back to their former position, and two more combs are separated. If combs with finer teeth are required, the large wheel is changed for another with more teeth on its circumference, and the cutters are also set at an acuter angle.

COMBATS, JUDICIAL (*a*.) The custom of judicial combats, of which traces were discoverable in our laws until the beginning of the reign of George IV., was introduced into civilized Europe by the barbarous tribes of Germany who overwhelmed the Roman empire. It appears to have been first legally established by Gondebald, king of the Franks, by an edict published at Lyons, March 29, A.D. 501, in which the monarch assigns his reasons for establishing, or rather [illegible] the institution: "Let causes be decided by wager of battle, to the end that rash oaths should no longer be taken respecting obscure facts, nor false oaths respecting certainties."

The rules of judicial combat are detailed at great length in the ordinances of various kings during the middle ages, but the following summary will be found amply sufficient for general readers When a plaintive claimed a possession which the defendant refused to resign, or charged him with a crime which he denied, a challenge was the immediate result. Whichever of them appealed to the combat threw down before his adversary some pledge, usually a glove, which was called the gage of battle, and taking this up was the signal that the challenge was accepted. In later ages it was necessary to have the permission of the king or liege lord before a challenge could be given, but at first, the Suzerain had no right to interfere until called to preside at the combat or to name a president, and his power was limited to naming the place and time for the contest. When the challenge was accepted, each combatant named certain witnesses, called sponsors, or godfathers, "because," says an old historian, "they were about to attend a baptism of blood," and these called the champions their god-children! These sponsors, or seconds, as they were subsequently called, were originally appointed to watch the combat, and see that its rules were fairly observed; but they soon began to join in the fight themselves, either to aid or to avenge their principals. Application was next made to the Suzerain to appoint the umpire or president, and the time and place of the combat. A space called the "close-field" was marked out, and surrounded by ropes or palings. At the upper part of this little amphitheatre a gallows or a pile of wood was erected, that the vanquished, if he escaped with life, might be instantly hanged or burned. In front of this were two seats covered with black, for the two combatants. Before entering the lists the combatants attended mass, and received the eucharist in the form prescribed for its administration to persons at the point of death; and so common were such events, that a special service was prepared for the occasion, called "the duellist mass," (*missa pro duello*,) which may be found in most ancient missals. When the service was concluded, the combatants were led by their god-fathers, accompanied by the heralds and clergy, to their seats in the lists, and a discourse was pronounced, usually by a priest, exhorting them not to tempt Providence if conscious of falsehood or injustice. An oath was administered to each, in which they called to witness, God, the virgin Mary, the saints, and especially "that good knight and gentleman St George," that their causes were just, and that they would not depart from them. They next swore on the Gospels that they had used no sorcery, witchcraft, or magical incantations, and that they had not about them any spell, amulet, or charm. But not satisfied with the oath, the president, called usually "the marshal of the field," caused the combatants to be searched, and at the same time had their arms measured, so that neither should have an unfair advantage by length of weapon. The marshal of the field, attended by the sponsors, then divided as fairly as he could the advantages of ground, sun, and wind, sometimes adding comfitures and other little sweets to serve as refreshments in the battle. The lists were then closed, and the spectators prohibited from entering them under pain of death; severe penalties were also denounced against any person who should distract or interrupt the combatants by coughing, sneezing, speaking, or making any sound whatever. When these preliminaries were arranged, the marshal gave the signal for combat by dropping his truncheon, and saying to the sponsors, "Let the brave champions go." In the earlier ages every combat was a duel "to the utterance,' that is, until one or other of the champions was so disabled as to be unfit for continuing the fight. Defeat was condemnation, and when the subject of charge was a capital crime, the vanquished passed at once from the lists to the gibbet.

Judicial combat in France was carried to a greater extent than in any other European country. Not only could a challenge be maintained between the principals of a suit, but either of the parties might challenge one of his adversary's witnesses, or even the judge by whom the cause was tried, if dissatisfied with his decision. Ladies or ecclesiastics fought by proxy; if their champion was overthrown he was condemned to lose his right hand, and this penalty was rigidly enforced, in order that champions should fight as strenuously in the cause of others as they would in their own.

In the reign of William the Conqueror judicial combats appear to have been very common in England, for one of his laws forbids clergymen to fight duels without the previous permission of their bishop. But the feelings of the British people were averse to this barbarism, and, from the eleventh century, courts of law possessed more authority in England than in any other country.

COMETS, (*a*.) The accounts of comets that have come down to us from earlier times, although somewhat numerous, and in many cases relating to extraordinary celestial objects, are nevertheless so vague, and in all probability so exaggerated, as to be of little value. While the opinion prevailed, that comets were temporary fires lighted up in our own atmosphere, that is, of the same nature with those transient meteors that attract a momentary gaze and disappear, no exact observations were made, and no pains seem to have been taken to verify an hypothesis so hastily and generally received. It appears not a little strange to us of the present day, that it did not occur to men so acute and sagacious as Aristotle and others, who evidently had paid some attention to this subject, that meteors, and all atmospherical objects are to be seen only over a small extent of the earth's surface, and that they are seen in opposite directions from places not very remote from each other. Now it is very well known that when a comet presents itself, it is not only seen over an extent of thousands of miles, but it seems to occupy throughout this region the same place in the heavens. It appears in the same constellation, and near the same star. The path of Halley's comet, for instance, traced among the stars, was essentially the same to European and American observers. It is hence manifest, without having recourse to any exact observations, that comets cannot be very near the earth, as the ancient astronomers supposed; that they must be far removed out of our atmosphere even to the region of the planets. This important circumstance was first fully ascertained by Tycho Brahe; and being well established, it was sufficient of itself to overthrow the ancient doctrine on this subject. One reason, no doubt, why this crude opinion prevailed so long, was the belief in the existence of solid crystal orbs supporting the planets, and wheeling one within the other. The idea of large bodies, like what we now understand the comets to be, intersecting and traversing those solid spheres of crystal, was wholly inadmissible and irreconcilable with the received notions, touching the heavenly bodies; a striking example of the tendency of error to propagate itself.

Comets being thus recognised as very distant bodies like the planets, the next inquiry was to ascertain the paths they described, and the laws which govern their motions. The keen and penetrating eye of Newton was now directed to this subject, and comets at once assumed the dignity of planets, revolving round the same central body, describing the same kind of curves, preserved in their places by the same forces, subjected to the same laws, and differing only, or principally in this: that their orbits are more oval, or more elongated, and lie in all manner of directions. This bold position was put to the test, in the case of the remarkable comet of 1680, which presented itself at this critical juncture, as if to vindicate this class of bodies of which it was so splendid a representative. The genius of Newton triumphed in this as in all his great enterprises; and comets now began to be regarded as an important part of the solar system. To put this rational and sublime theory beyond all question, and to convince the world of its truth, it was only necessary to identify a comet as one which had before appeared, or, in other words, to foretell the return of one of these bodies, and delineate beforehand its path through the heavens. This nice and difficult task was undertaken and accomplished by Halley. By comparing a comet which appeared in 1682, and which he saw himself, with one which was observed in 1607, they seemed to describe one and the same orbit.* It was not to be supposed that two comets would follow each other in identically the same path round the sun. It was fairly presumed, therefore, that these were not two separate comets, but different appearances of one and the same comet; and that the interval between 1607 and 1682, or about seventy-five years, was the time employed to complete a revolution. This conclusion was rendered still more probable by going back about seventy-five years further, namely, to 1531, when we find a comet described, that, from the observations that have come down to us, evidently pursued the same track through the heavens, which was described by that of 1607, and that of 1682. If any doubt remained of the identity of these comets, it must certainly be removed, when we are told further, that at another interval of the same length, that is to say, in the year 1456, there is a record of a comet whose path seemed evidently to correspond with those already referred to.

With such evidence before him, Halley ventured to infer that the comet of 1682 revolved round the sun in about seventy-five or seventy-six years, and that consequently it might be expected to appear again, after the lapse of another such period. He accordingly had the courage and the good fortune to predict that this same comet would return towards the close of the year 1758, or the beginning of 1759. The time of a revolution seemed to be liable to considerable variation, which might be attributed, with great probability, to the attraction of the planets. To fix the time of the predicted return, as precisely as the nature of the case would admit, Clairaut undertook to calculate the effect which the larger planets, Jupiter and Saturn, would have, in accelerating or retarding the motion of the comet, the result of which was, that the return of the comet to its perihelion, would be delayed by these two planets, about one year and eight months. The time fixed by Clairaut for the comet's reaching its point of nearest approach to the sun, was the 4th of April. He observed, at the same time, that he might err a month, by neglecting small quantities in the calculation. The comet was first seen near Dresden, by a peasant, on the 25th of December, 1758, thus verifying the prediction of Halley; and it passed its point of nearest approach to the sun, the 13th of March 1759, within twenty-three days of the time fixed by Clairaut, for the perihelion passage, and accordingly falling within the assigned limits.

It again appeared in the autumn of 1835, showing a period of about seventy-six years from the preceding appearances. There is reason to believe that an appearance of this comet can be traced back as far as 130 years B.C.; and that it is the same comet that was seen in the years 323 and [illegible], when it was decribed as being of vast magnitude and horrible aspect. This is also supposed to be the comet which appeared in 550, 855, [illegible], and 1006; in which latter appearance, its nucleus is reported to have been four times as large as the planct Venus. It was seen in 1230, [illegible], and 1380, and again in 1456: at this last visit it was accompanied by a tail, which extended over sixty degrees of the heavens, and gave rise to so much terror and consternation, that Pope Calixtus ordered prayers to be offered up from all parts of Christendom, for the removal of the comet and its malign influences. The Turks were engaged at this time in a successful war against Greece; and when Europe was fearing nothing less than subjugation at the hands of the victorious Turks, this comet, having a tail in the form of a Turkish sabre, was regarded by the tribes of the West as the emblem of divine vengeance. After this, its appearances and progress are regularly recorded to the present time. In the sixteenth century it is said to have displayed a fine gold colour. Halley, in 1682, describes it as being as large and bright as Jupiter, with a tail of 30°. The inclination of its orbit to the ecliptic is about 7½°. In 1835, the length of its tail to the naked eye was about 6°; with a telescope it appeared larger.

The fulfilment of Halley's memorable prediction, placed the theory of comets upon a sure basis. It has not only confirmed those who had entered into all the *a priori* reasoning upon the subject, but it was of a nature to carry conviction to the uneducated and the sceptical, to convert the mass of mankind, and make them firm believers, not only in the doctrine respecting comets, but in the whole science of modern astronomy. A comet is a

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* An orbit is recognised to be the same with a former one, when it has in all respects the same position in the heavens, that is, when there is an agreement in the following particulars. 1. The *perihelion distance*, or distance of the point of nearest approach to the sun. 2. The position of this point or *longitude of the perihelion*. 3. The *inclination* of the plane of the orbit to the plane of the ecliptic. 4. The position of the intersection of these planes, or the *longitude of the node*. 5. The *direction* of the motion, whether from west to east like the planets or the reverse. The comet of 1682, for instance, had its orbit determined as follows:

Perihelion distance	Longitude of the perihelion	Inclination	Longitude of the node	Direction.
0·58 Sun's distance from the earth, being 1.	301° 36'	17° 42'	50° 48'	Retrograde.

The following are the corresponding particulars for the comet of 1607.

0.58	302° 16'	17° 2'	50° 21'	Retrograde.

longer a meteor, a transient fire in our atmosphere. It is no longer a messenger of evil. It is no longer to be dreaded as a mysterious and unwelcome intruder among the celestial luminaries. It is to be ranked among the great works of nature. It is not only a curious object to behold, but it affords an interesting subject of contemplation. We delight to trace it through its long journey of three-fourths of a century; and when the eye can no longer distinugish it, to follow it in imagination, as it pursues its upward flight, leaving planet after planet far behind, penetrating the unexplored depths of space, with an almost inexhaustible force, and not ceasing its ascent, till it has doubled the distance of the most remote of the planetary bodies.

Other comets are at length found, as might be expected, to possess the character of revolving bodies. A comet appeared in 1818, which was recognized as one which had been observed several times before. Its orbit was of so small an extent, compared with that of most comets. as to admit of its period, or time of a complete revolution, being computed. This was ascertained by Encke, to be about three years and a third, and its return was predicted to take place in June 1822. Astronomers were apprised at the same time, that its situation in the heavens, would be such as to render it invisible in Europe and America; but that it would be seen by the inhabitants of New South Wales. It actually returned according to the prediction; and after sufficient time had elapsed for intelligence to arrive from that quarter of the globe we were greeted with a regular set of observations, made by Mr Rumker, an experienced astronomer, at Paramata, completely justifying the anticipations of the sagacious Encke. This name has therefore already become familiar to us, like that of Halley, as a convenient means of designating a comet, with which we are continually becoming more and more acquainted, and through it, with the whole class to which it belongs. As it completes a revolution in about three years and a third, it has returned several times since 1822, namely, in 1825, 1828, 1832, 1835 and 1838. These frequent returns have been applied to a valuable purpose. They have served to teach us that the celestial spaces are in all probability not absolutely void, as we have been accustomed to regard them. There is the strongest reason for believing that this comet is resisted by an ether or some extremely rare medium. At each successive return, the evidence has accumulated, till at last the position assumed seems scarcely to admit of a doubt. The effect of the supposed medium has been, by checking the motion of the comet, in the direction of a tangent to its orbit, to cause the attraction toward the sun to predominate, whereby the path described is continually contracted into a sort of spiral, the time of a revolution at the same time being continually diminished. The amount of this diminution is found to be about two days each revolution, after making allowance, with all possible precision, for the disturbing influences of the planets. No other effect has been observed to take place, after the most careful scrutiny, except that which would necessarily arise from the alleged cause.

Another comet is now supposed to afford additional evidence on this all important point, which gives an extraordinary interest to each successive return of those comets whose periods are known. "It cannot be doubted," says Sir John Herschel, "that many more will be discovered, and by their resistance, questions will come to be decided, such as the following: What is the law of density of the resisting medium which surrounds the sun? Is it at rest or in motion? If the latter, in what direction does it move? Circularly round the sun, or traversing space. If circularly, in what plane? It is obvious that a circular or vorticose motion of the ether would *accelerate some comets and retard others*, according as their revolution was, relative to such motion, direct or retrograde. Supposing the neighbourhood of the sun to be filled with a material fluid, it is not conceivable that the circulation of the planets in it for ages, should not have impressed upon it some degree of rotation, in their own direction, and thus may preserve them from the extreme effects of accumulated resistance."

Another comet, known as Biela's, appeared in 1826. It is recognised as being the same which was observed in 1805 and in 1772. It was found to have a period of six years and three quarters. Its return was accordingly predicted to take place in October, 1832; and it actually made its appearance at the time and place assigned. It is remarkable for its near approach, not to the earth itself, but to the earth's orbit, the least distance being less than the sum of the semidiameters of the comet and the earth, so that if the earth had happened to be in that point, at the same time with the comet, it would certainly have been involved, to a greater or a less degree, in the nebulous matter of the comet. The earth, in fact, reached this point a month later than the comet, and did not, at any time, come within about fifty millions of miles, or half the distance of the earth from the sun. This comet, at its greatest distance from the sun, departs about six times the earth's distance, or somewhat beyond the orbit of Jupiter. Its last appearance was in 1838.

These are the only comets of whose periods we have any certain knowledge. There are, however, two others whose periods have been stated; but the times are not yet arrived for testing the accuracy of the predictions. One of these comets appeared in 1264, and again in 1556—an interval of 292 years; and it is expected again in 1848. The other comet was observed by Newton in 1680, and he predicted its return in 575 years; a long period must therefore elapse before the truth of this calculation, or conjecture, can be verified. The tail of this comet, which is several times noticed in history, was of such vast extent, that when the head of the comet was in the horizon, the extremity of its tail was in the zenith.

It is thus abundantly proved that comets are revolving bodies like the planets, and that they obey the same great laws of attraction. There seems, notwithstanding, to be a marked difference in their physical constitution. Comets appear to be composed of a substance extremely light compared with that of the planets. Thus Halley's comet which, as we have seen, was detained a year and eight months by the attraction of Jupiter and Saturn, seems to have had little or no reciprocal influence upon either of these planets. A still more striking instance to the same purpose, occurs in a comet which appeared in 1770, which, according to the highest authority, had been revolving in an orbit that did not admit of its being seen from the earth, completing a revolution in about fifty years; but passing in 1767 within a short distance of Jupiter, its course was entirely changed, so as to bring it near to the earth in 1770, and cause it to complete one revolution about the sun in the short period of about five years and a half. Coming near to Jupiter a second time, in the remote part of its course, its orbit is again shifted to one requiring a period of about twenty years. In one of these cases the comet is proved to have passed so near to Jupiter, that its attraction to this planet was two hundred times greater than its attraction to the sun. Still, it not only had no sensible effect upon the planet itself, but it did not even disturb the motion of its satellites, although it passed between them and the body of Jupiter.

This comet came nearer to the earth than any other whose path is known. Its least distance was about six times that of the moon. It was retarded in consequence, about two days, by the earth's attraction. If the comet had the same quantity of matter with the earth, it must have affected the length of our year to the amount of nearly three hours; but it did not exert the least perceptible influence. If the year had suffered an alteration to the amount of two seconds, it would probably have been detected. It is hence inferred that the quantity of matter contained in this comet could not exceed the five thousandth part of that contained in the earth.

What is here stated with respect to the lightness of comets, agrees very well with the result of actual observation. Many comets have appeared that seem to be destitute of any nucleus or solid, compact mass at the centre. They are apparently composed of a matter resembling the thinnest vapour, so that the light of the faintest star which is obscured by the least perceptible fog, scarcely suffers any diminution by penetrating many thousand miles of this substance. The comets of Encke and Biela, and some others, seem to be thus constituted. In those cases where there are signs of a solid nucleus, it is for the most part of small extent. It has been estimated in two instances at less than thirty miles in diameter. The comets of 1807 and 1811 were supposed by Sir W. Herschel to have each a diameter of about five hundred miles.

Even where there is the appearance of a compact mass at the centre, there is still surrounding it the same nebulous appearance of vast extent, which seems to constitute, in other cases, the whole matter of the comet. This nebulous appearance, instead of being of a uniform or a progressively increasing brightness from the circumference inward, is often apparently composed of one or more rings or strata, many thousand miles in thickness, alternating with fainter portions, an appearance not unlike what would be presented to a spectator viewing from a distance our earth with its different layers of clouds, one above another separated by portions of transparent atmosphere.

A remarkable circumstance has been observed in two or three instances, which consists in the great contraction of the body of the comet as it approaches the sun. Encke's comet was carefully examined at different distances from the sun, varying from about one hundred and fifty to fifty millions of miles. In the former case, its diameter was twenty-five times as great as in the latter, and its bulk, of course, was reduced to about one sixteen thousandth part by a reduction of its distance to one-third part. This enormous change in its dimensions, has been ascribed by some to the varying density of the sun's atmosphere, the gaseous matter of the comet, being, as is supposed, more and more condensed as it penetrates the denser strata of the supposed medium, just as a balloon is enlarged or contracted, according as it is situated in a denser or rarer part of the earth's atmosphere. Others suppose, that as the parts of the nebulous matter of the comet are distant, and held together by so feeble a power, they revolve in a degree independently of one another, each having its own [illegible]lion, whereby they are brought nearer to each other, as they approach the sun, and separate again farther and farther as they depart from it. Another hypothesis is that the nebulous matter of the comet, like fog or common vapour, which disappears before the rising sun, ceases to be visible, in like manner, as the comet approaches its perihelion, in consequence of the heat to which it is exposed, and that it is restored to its sensible form when it is sufficiently withdrawn from the influence of the solar rays.

But the most obvious and striking characteristic of comets, especially to the majority of observers, is the luminous train called the *tail*, with which they are generally attended. We say generally, since this is not by any means a constant appendage. Many comets have appeared, as those of Encke and Biela, that seemed to be as round as the planets. Others again, as the comet of [illegible] for instance, have exhibited a train only in certain parts of their course and not in others: sometimes it is visible only in certain parts of the earth, and in certain states of the atmosphere. Where it exists at all it seems to increase as the comet approaches the sun, and to be more conspicuous, and of greater extent, after the comet has passed its perihelion than before. It is also remarked that the direction of this luminous train is, for the most part, in a line opposite to the sun. There are remarkable exceptions, however, to this rule. It is found in some instances, to be right angles to a line joining the comet and sun. In its common position the train is often curved more or less, the extreme parts being left as it were a little behind, while the preceding or convex portion is observed to be somewhat brighter than the rest, as though there were some rare medium which condensed the luminous matter and slightly impeded its motion. Where the train is not curved, it is often remarked that the light is faintest in the middle and strongest towards the edges, as though it were a hollow cylinder, or truncated cone. The tail is sometimes divided into two or more branches, lying in some cases the same way, but often more or less inclined to each other. The comet of 1744 had six tails, spreading and diverging like the sticks of a fan, but curved at the same time like a sickle. They were each about 4° broad, and from 30° to 44° long. The light was so strong, that they were distinctly perceived after the sun rose. Single trains have been observed of all lengths less than 100°. The absolute lengths have been computed in many instances, and found to vary from a few millions to one hundred millions of miles.

Nothing that deserves the name of an explanation has yet been offered, respecting the constitution and manner of production of this curious phenomenon. The hypothesis most in vogue, is that which ascribes it to the mechanical impulse of the solar rays, penetrating such an extent of vaporous matter very feebly held together by the small central attraction; just as a discharge of shot through a mass of cotton or eider down may be supposed to carry a portion of this light substance with it, different distances. This notion is of course wholly inapplicable to those cases where the luminous train does not lie in the direction of the sun's rays. It is, moreover, less entitled to consideration, now that light itself, instead of being an emanation of particles, is beginning to be more generally considered as depending upon the undulation of a medium, which medium may be that very ether indicated by Encke's comet, as already mentioned.

It seems to be taken for granted, that this train is a material substance, and that this substance is of the same nature with the nebulous atmosphere of the comet; and that it once made a part of that atmosphere. But how is it separated and borne along to such enormous distances? What power retains it, and keeps it in its relative place, when, as it should seem, the attraction exerted by such an inconsiderable mass as that of a comet, is wholly insufficient? What should cause the extremity of the tail to move ten or twenty times as fast as the comet itself, when it is so many times farther from the sun, as it must do in order to keep the same position with respect to the central body? If it is said in reply, that it is perpetually renewed by every new emission of solar light, we beg leave to ask what becomes of these long trains, when they have served their momentary purpose, and why should they not continue to reflect the light that falls upon them, long after they have been generated? thus producing a broad luminous tract throughout the space over which the tail has swept.

It is indeed, generally admitted, that more or less of the luminous train is left behind, and wholly detached from all connection with the body whence it proceeded. This is rendered probable, not only for the reasons above suggested; but also from the fact that in several instances this appendage is found to become shorter and shorter, and less and less conspicuous, at each successive return. Not only the train, but the body of the comet seems to be wasting away, as in the case of Biela's, which at its last return could scarcely be discerned with a good ten feet telescope, in the most skilful hands; and was actually invisible to the inhabitants of America; for the want of sufficient aid to the natural sight.

If comets are thus destined to part with the matter of which they are composed, and the celestial spaces are continually strewed with this highly rarified, and all but immaterial substance, we have arrived at a probable source of that medium, which seems to have been detected by the motions of Encke's comet. We may remark also, that the substance surrounding the sun, and lying in the direction of its equator, and extending many millions of miles, giving rise to what is called the *zodiacal light*,* may have the same origin, that is, may be composed of the tails of innumerable comets.† Indeed, the sun itself may be said to have a tail or train extending in opposite directions, borrowed, perhaps, by little and little from each passing comet; and this train may in some degree resemble that of a comet, and be a conspicuous object to a spectator situated in such a manner as to admit of its being seen unmixed and unobscured by the light of his own atmosphere.

It will be inferred, we are aware, from what we have said, that comets may, by slow degrees, be dispersed through the celestial spaces and absorbed into the sun's atmosphere, and thus cease to be comets any longer. There is also another way in which they may terminate their existence as comets. This very medium, this solar atmosphere, strewed with the wreck of we know not how many of these ill fated bodies, seems fitted to prove destructive to many more. Encke's comet, by its short period and frequent returns, affords the best opportunity hitherto presented, of judging of the consequences that must result from such a state of things. This comet is evidently approaching nearer and nearer to the sun, each revolution. There is no cause known to astronomers that can save it from its impending fate; and hereafter, when we shall have become familiar with the return of comets, and are well acquainted with their diminishing periods, it may become an object of emulation to astronomers, to calculate and foretell the time when a comet shall terminate its career by falling into the sun. The comet of 1680 has already approached so near as to be only one sixth of the sun's diameter distant when in perihelion. It appeared in Newton's time, and no doubt seems to have existed in the mind of that great man, that it would, at some future epoch, cease to revolve. This opinion he retained to the latest period of his life, and he seems to have made some estimate of the time that might be expected to elapse before such a catastrophe would take place; "possibly," he says, "after five or six revolutions."

This idea of the destiny of comets, that they were designed ultimately to fall into the sun, and be consumed, was the more readily received formerly, when the sun was regarded as a mass of ignited matter, that required replenishing like our domestic fires. Light itself, moreover, being supposed to be an emission of particles, it seemed to be necessary to find some means of supplying this continual exhaustion of the sun's substance. Other and more remote phenomena were referred to as strikingly analogous to the case in question. Several of the fixed stars had, at different times, suddenly burst forth with great splendour, so as to surpass even Jupiter and Venus, and in some instances to be visible in the day time. These stars, it was supposed, owed their increased brilliancy to a fresh supply of fuel in the form of a precipitated comet. Such are the conjectures and speculations of some of the greatest men the world has produced.

But among astronomers of the present time, who allow this tendency in cometary bodies toward the sun, without being able to point out any sufficient check, some maintain that matter so exceedingly rare, and indeed matter of any kind and of any form with which we are acquainted, must in all probability be completely volatilized by the solar heat, and absorbed into the solar atmosphere, long before it could reach the body of the sun. It is believed that some comets already give indications of a rapid approach to this sort of dissolution.

Another fruitful subject of speculation relates to the possibility or probability of a comet's coming so near the earth, as to occasion a great revolution in the physical condition of our globe. The nearest approach of one of these bodies that has hitherto taken place, so far as our knowledge extends, was that of the comet of 1770, as already mentioned. The least distance, in this case, was no less than 1,456,840 miles. No effect upon the earth or moon was perceived, although an exceedingly slight one, if it had existed, must have been detected.

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* This light is of a pyramidal or leaf-like shape, having the sun for its basis and the ecliptic, or rather the solar equator, for its axis, or line of direction. It is faint like the tail of a comet, or the milky way, and is for the most part confounded with the twilight, except in low latitudes, where it is more frequently seen. But in the month of April, in the evening, or in October, in the morning, it makes so large an angle with the horizon in the temperate latitudes, and extends so high, that it may be seen after the twilight has ceased in the evening, and before it begins in the morning.

† Herschel's Astronomy Art. 626.

A much nearer approach than this is liable to take place, from the known position of the orbits of other comets whose elements have been calculated. The great comet of 1680, so remarkable in other respects, is also distinguished as coming near to the earth's path. Its least distance is about twice that of the moon, or 440,000 miles. Its attractive force, therefore, would be only one-fourth of that of the moon, on the supposition that it contained as much matter. Even this force would be exerted only for a short time, not long enough, probably, to produce any sensible disturbance in the waters of the ocean. The effect of the moon in causing the tides, is the accumulated result of a long continued effort, with comparatively little change in the position of the attracting body, or the direction of its action. With all the force that the moon actually exerts, it would have very little, if any, sensible influence in disturbing the ocean, if it were to dart by us with the rapidity of the comet under consideration.

Biela's comet has already been described as coming so near the earth's track, as to be liable actually to involve a part of the earth at least, in its nebulous atmosphere. Let us now see what chance there is of the earth's being, for instance, within half a million miles either way, of the particular point of danger. There being in the circumference of the earth's orbit six hundred millions of miles, in round numbers; on the supposition that the comet passed the point in question, once a year, there would be an equal chance for each portion of a million of miles, that the earth would be there at that juncture; of course, according to the doctrine of chances, the earth may be expected to be within half a million of miles of the point under consideration, once in six hundred years, it being supposed that the comet passes this point once a year. But as it actually passes it only once in six years and three quarters, the above period must be increased in the same proportion; that is, the near approach of the earth and comet, above referred to, cannot be supposed to occur more than once in about forty centuries.

Allowing the possibility of the event in question, what would be the probable consequences of a near approximation, or even a rencontre? Not, so far as we can judge, a violent shock or concussion, like that occasioned by one vessel running against another, not a sudden and overwhelming rush of the waters of the ocean over the land. This comet of Biela, according to the best information we possess, seems to be merely a collection of the thinnest possible vapour. Let us imagine a person in a balloon approaching a cloud. The object might seem a formidable one; but the aeronaut is plunged in the vaporous mass before he is aware of it. He is sensible of no material change; he has felt no jar. He only perceives a little obscurity in the objects around him, and wonders what has become of the cloud that seemed so menacing in the distance. So it may be with regard to comets. We may have already encountered one of these bodies without ever dreaming of it. We may have been enclosed in its vast envelope without perceiving any change, except, perhaps, some peculiar hue in the atmosphere, or some unusual tint in the objects about us. We are passing frequently through parts of space that have, in all probability, been visited by the enormous train of some comet, and which, we have reason to believe, still retain traces of this substance. It is hardly possible to conceive that the earth should have escaped all contact with an element so widely diffused, or that it should fail to attract and appropriate to itself some portion of this matter. We see the zodaical light, supposed to be identical with the substance in question, embracing the orbits of Mercury and Venus, and of course enveloping these planets, and mixing with their atmospheres, and subjecting them to all the consequences that we seem to dread from the introduction of matter so foreign. There is little reason to believe that the earth is exempt from the same lot, and little ground to apprehend evil from a condition that seems the necessary result of the original constitution of the system to which we belong. What the tail of a comet is, it were vain to conjecture. Some future chemist may perhaps tell us. But whatever it be, whether watery vapour or any other vapour, or one of the permanent gases, or something different from all these, and wholly unlike any of our aëriform substances, there is little reason to suppose that it would, on the whole, be injurious. Even if it were deleterious in itself, if it were the most virulent poison, still, according to all that we know of it, it is so exceedingly rare, and would constitute so very small a proportion as an ingredient of the air we breathe, that no evil could be apprehended from it. The fixed air and other noxious gases, that are disengaged by volcanoes and discharged into our atmosphere, may often be found to exist in much greater quantity, compared with the vital principle, especially in the vicinity of the volcano, than we are liable to be exposed to, from the largest influx from a comet's train. Such an accession of matter to our globe, although it is believed to have actually taken place, perhaps more than once, has not as yet been distinctly and satisfactorily recognised. There are several instances on record, of a peculiar state of the atmosphere, that has been ascribed to the presence of matter from this source. The following are Mr Arago's statements and reasoning upon this subject.

"The fog of 1783 began nearly on the same day (the 18th of June) in places very distant from each other, as Paris, Avignon, Turin, Padua. It extended from the northern coast of Africa to Sweden; it was also observed in a great part of North America; it lasted more than a month. The air, at least that of the lower regions, did not appear to be its vehicle, because in some places it came on with a north wind, and in others with a south or east wind; travellers found it on the highest summits of the Alps. The abundant rains which fell in June and July, and the highest winds, did not disperse it. In Languedoc, its density was occasionally so great that the sun did not become visible, in the morning, till it was 12° above the horizon; it was very red the rest of the day, and might be looked at with the naked eye. This fog or smoke, as some meteorologists have called it, had a disagreeable odour. The property by which it was particularly distinguished from common fogs, was its being, by all accounts, very dry, whereas most fogs are moist. At Geneva, Senebier found that the hair hygrometer of Saussure, which in our fogs stands at 100°, ranged in the midst of this, at low as 68°, 67°, 65°, and even 57°. Besides all this, there was one very remarkable quality in the fog or smoke of 1783; it appeared to possess a phosphoric property, a light of its own. I find, at least in the accounts of some observers, that it afforded, even at midnight, a light which they compare to that of the full moon, and which was sufficient to enable one to see objects distinctly at a distance of two hundred yards. To remove all doubts as to the source of this light, it is recorded that at the time there was a new moon. Such is the state of the facts; let us now see whether, in order to explain them, it will be necessary to admit, that in 1783 the earth was immersed in the tail of a comet.

"The fog of 1783 was neither so constant, nor so thick, as to prevent the stars being seen every night, in all the places where it occurred. Admitting therefore that the earth was in the tail of a comet, there is but one way of explaining why the head of that comet was never seen, and this is, by supposing, that it rose and set almost at the same time with the sun; that the superior light of that luminary rendered it invisible; and that this conjunction of the sun and comet lasted more than a month. At a time when the proper motions of comets appeared subject to no rule, when every one disposed of them as he pleased, considering them as mere meteors, the supposition we have just made might be admitted; but now that comets are known to all astronomers to be heavenly bodies, as obedient as the planets to the laws of Kepler; now that the mutual dependence of distance and velocity is known; now that observation and theory combine to prove that all these bodies *necessarily* move in their orbits with a rapidity that increases as they approach the sun, it would be contrary to all established principles to admit that a comet, interposed between the sun and earth, could revolve about the sun in such a manner as to appear constantly near it for more than a month, to a spectator on the earth! It is in vain to attempt to explain the difficulty attending an exact conjunction, by supposing the tail very large. If it were as large as that of 1744, the objection would remain in all its force. The dry fog of 1783, then, whatever may have been said of it, was not the tail of a comet."

A dry fog, similar to the one above described, was noticed in different quarters of the globe, in 1831. It was observed on the coast of Africa on the 3d of August, in the south of France on the 10th, and at New York on the 15th of the same month. This fog was so thick, that the sun might be looked at all day, without any coloured glass or other protection to the eye; and, in some places, the sun remained invisible till it had risen 15° or 20° above the horizon. When clearly seen, it was often remarked, that the colour was changed to an azure blue, and sometimes to greenish or emerald green. At night the heavens occasionally became clear, so that the stars could be seen. Where this fog was observed and while it continued, there was a very unusual degree of light during the night. In Siberia, at Berlin, and at Genoa, in the month of August, the smallest writing could sometimes be read even at midnight. This phenomenon, however, was not general, even in Europe. At Paris and some other places, it was but faintly perceived, and for a few days only. If a comet, therefore, had passed at this time, between us and the sun, no reason can be given why it was not seen. We are hence obliged to conclude, as in the former case, that the fog was not attributable to a comet.

The following are the remarks of Arago upon the agency which this extraordinary fog is supposed by some persons to have had in the uncommon pestilence which made its appearance in Europe, about the same time.

"Many authors have chosen to see some connection between the extraordinary fog of 1831 and the entrance of the *cholera morbus* into Europe. This opinion reminds me of what an old English traveller, Matthew Dobson, says of the effects of a periodical wind on the west coast of the continent of Africa, which is called the *Harmattan*. On reading over the original narrative just as I was about to send these pages to the press, I was so struck with several points of resemblance between the properties of the air, where this wind prevails, and that which is filled by the dry fogs of Europe, that I determined to give here a short analysis of that memoir. The reader will observe, that out at sea, some distance from the shore, the Harmattan loses its peculiar qualities; and he will remember, that in 1783 the dry fog was not perceived in the middle of the Atlantic, although it darkened at the same time the atmosphere of Europe and America. He will see also, that all fogs of this description are not fatal. A wind that blows three times each season from the interior of Africa to the Atlantic Ocean, is called the *Harmattan*. On that part of the coast which lies between Cape Verd (lat. 15° N.) and Cape Lopez (lat. 1° S.), the Harmattan is chiefly felt in December, January, and February. Its direction is between E.S.E and N.N.E. It commonly lasts two days, sometimes five or six. It is always a moderate wind. A *fog* of a particular kind, and thick enough to impede at noon all but the red rays of the sun, always presents itself where the Harmattan blows. The particles, of which this fog is formed, are deposited on the grass, on the leaves of trees, and on the skin of the negroes, in such profusion as to produce a white appearance. Of the nature of these particles we are ignorant; we only know that the wind carries them but a short distance from the shore. A league out at sea the fog is much lighter; and, at the distance of three leagues, it disappears entirely, although the Harmattan is still felt in all its force. The *extreme dryness* of the Harmattan is one of its most striking characteristics. When it lasts some time, the branches of orange and citron trees die; the covers of books (even when they are shut up in tight trunks, and have additional covering of linen,) warp as if they had been before a large fire. Pannels of doors, window-shutters, and articles of furniture crack and often break. The effects of this wind upon the human body are not less remarkable; the eyes, lips, and palate become dry and painful. If the Harmattan last four or five days together, the skin of the hands and face comes off; to prevent this, the natives rub their bodies all over with grease. After what has been said of the fatal effects of the Harmattan on vegetables, it may be thought that this wind *must be very unhealthy*, whereas quite the contrary is observed. Intermittent fevers are completely cured by the first breath of the Harmattan. Patients reduced by the excessive bleeding practised in that country, recover their strength; remittent and epidemic fevers also disappear, as if by enchantment. Such is the salutary influence of this wind, that, while it lasts, infection cannot be communicated even artificially. This assertion rests upon the following fact. In 1770, there was an English vessel at Wydah, called the *Unity*, which was loaded with three hundred negroes. The small pox having appeared among some of them, the owner determined to inoculate the rest. All who were thus operated upon, before the Harmattan began to blow, took the infection. Seventy were inoculated the second day after that wind began to blow, and not one of these had the disease, or the least eruption. However, some weeks afterwards, when the Harmattan no longer blew, these very persons took the disorder. It is also added, that during the second appearance of the malady, the Harmattan began to blow again, and sixty-nine slaves, who had it, all recovered. The country over which this remarkable wind passes before it reaches the coast, is for two hundred and forty miles composed of verdant plains, entirely open, some woods of small extent, and here and there a few rivers and inconsiderable lakes."

Other disasters, and indeed all sorts of malign influences, have been attributed to comets by authors every way entitled to respect; and this has been done without taking the trouble to assign any definite cause for effects of so various a character, or to point out any connection whatever, depending upon the known laws of the world we live in. Mr Arago espouses the cause of comets, and maintains their innocence.

"An English physician," he says, "whose name is not unknown to philosophers, Mr T. Forster, has lately treated particularly of this subject. According to him, '*It is certain*, that ever since the Christian era, the most unhealthy periods are precisely those in which some great comet has appeared; that the approach of these bodies to our earth has always been accompanied by earthquakes, eruptions of volcanoes, and atmospheric commotions; whereas, no comet has ever been seen during the salubrious periods.' Those who will take the pains to examine critically the long catalogue, given by Mr Forster, will not, I am sure, be led to the same conclusions. The whole number of comets mentioned by historians, reckoning from the beginning of the Christian era to the present time, is about five hundred. At the present time, when the heavens are examined attentively and skilfully, when comets that can be seen only by the aid of the telescope are no longer overlooked, the average number of these bodies is more than two for each year. If we agree with Mr Forster, that their influence begins before they are visible, and continues some time after, we shall never be without a comet to account for every phenomenon, misfortune, or epidemic that can occur. This remark is applicable also to the memoirs of the celebrated Sydenham, who was an advocate for the influence of comets; to the dissertations of Lubinietski, &c. Mr Forster has moreover, I ought to say, so extended, in his learned catalogue, the influences of comets, that it would seem there is scarcely a phenomenon which is not to be ascribed to them. Hot and cold seasons, tempests, hurricanes, earthquakes, volcanic eruptions, violent hail-storms, great falls of snow, heavy rains, overflowings of rivers, droughts, famines, thick fogs, flies, grasshoppers, plague, dysentery, contagious diseases among animals, &c., are all registered by Mr Forster, as consequences of the appearance of some comet, whatever may be the continent, the kingdom, the town, or the village so visited. By thus making out for each year a complete catalogue of all the miseries of this lower world, any one might foresee that a comet would never approach the earth, without finding a part of its inhabitants suffering under some calamity or other. By a strange accident, well worthy of remark, the year 1811, the year of the most brilliant of modern comets, the year of its passage so near the earth, is that which has furnished our author with the fewest phenomena. Let us see what is to be found under this date? "*A cold winter, followed by a hot and dry summer; meteors in Germany.*" As to maladies, we find no record whatever! How then, with such a fact as this before us, can we attach any importance to the accidental coincidences noted in other parts of this table? How are we to regard the celebrated comet of 1680, which, blowing now hot and now cold, increased the frosts of winter, and the heat of summer? In 1665, the city of London was ravaged by the plague. If, with Mr Forster, we attribute this to the remarkable comet which appeared the same year, in the month of April, how are we to explain why the same pestilence did not extend to Paris, to Holland, to any of the numerous town in England except the capital? This difficulty must be met; and until it is done away, we shall expose ourselves to the ridicule of every man of sense, if we attempt to make comets the messengers of evil. Let us now see which are the comets whose tails may have mingled with the earth's atmosphere; and then search the histories and chronicles of the same period, to discover whether, at the same time, there were not manifested, *in all parts of the earth at once*, unusual phenomena. Science may take note of such researches; though, to tell the truth, the extreme rarity of the matter which composes the tail, would lead one to expect nothing but negative results. But when an author appends to the date of a comet, like that of 1668, the remark that *all the cats in Westphalia were sick*; and to the date of another, that of 1746, the circumstance, very little analogous to the former to be sure, that an *earthquake* destroyed in *Peru* the towns of Lima and Callao; when he adds that, during the appearance of a third comet, a *meteoric stone* fell in *Scotland*, into a high tower and broke the wheels of a clock; that, during the winter, wild pigeons appeared in large flocks in *America*; or still more, that, *Ætna* or *Vesuvius* threw out torrents of lava,—we must consider him as displaying his learning to little purpose. If, in thus registering contemporary events, he thinks he has established some new relations between them, he is as much mistaken as the old woman, mentioned by Bayle, who, never having put her head out of her window without seeing coaches in the Rue St Honoré, imagined herself to be the cause of their passing.

"I wish, for the honour of science, that I could have dispensed with taking any serious notice of the ridiculous ideas I have just adverted to, but I am satisfied that this exposition will not be without use, for Gregory, Sydenham, and Lubienietski have many followers among us. Moreover, if you will only listen, in those circles which are called fashionable, to the long discourses of which the approaching comet is the theme, you may decide whether there is any room to congratulate ourselves upon the pretended diffusion of knowledge, which so many *perfectionists* are pleased to consider as the distinguishing feature of our age. For myself, I have long been cured of these illusions. Under the brilliant but superficial gloss, with which the pseudo literary studies of our colleges cover all classes of society, we almost always find, to speak plainly, a profound ignorance of those beautiful phenomena, those grand laws of nature, which are our best safeguard from prejudice."

CONDE, Don Jose-Antonio, a Spanish historian, was born at Peraleja, in the provence of Cuenca, and educated at Alcala. He was intended for the legal profession; but loving literature for its own sake, and having from an early age applied himself to the oriental languages, he obtained an appointment in the royal library at Madrid, and was thus fixed in the very situation where he could be most usefully and most happily employed. His first publication consists of translations from Anacreon and Theocritus—a juvenile production which was well received. His second was a version of that part of Edrisi the Nubian's Geography which relates to Spain: the Arabic text was published with it, and he added notes, which, according to M. Silvestre de Sacy, are of little value. He was, however, a diligent student, who neither mistook the nature of his own talents, nor overrated them, but was contented to be one of the pioneers of literature. His merits were properly appreciated, and the academy of history appointed him their antiquary and librarian; but the even tenor of his life was interrupted by Bonaparte's usurpation of Spain. A few men of letters (to the honour of letters and of the Spanish character they were but few) took what they supposed to be the strongest side, and acknowledged the intrusive government. Conde was one of that unworthy number, and he accepted, under the intruder Joseph, the appointment of *archivista*, or keeper of the records for the home department. Consequently he found it necessary to fly when the French were driven from Madrid, and the battle of Vittoria made him an exile. He took shelter in France, and remained there in retirement till the year 1817, when he was permitted to return into his own country. The indulgence of the government was not extended further, and therefore he was not restored to his office in the royal library; but the academy of history replaced him on their list of members, and reappointed him their antiquary. A proper distinction was made here; the government could bestow nothing more than forgiveness upon one who had given his assent and consent to a foreign usurpation, but it did not interfere with the proceedings of the academy, which, as a literary body, took no cognizance of political offences. In Conde's case the offence proceeded wholly from moral weakness; he was one of those men whose minds are too much occupied by their favourite pursuits to have any room for ambition, or for avarice. In 1820 he published the first volume of his Moorish History, the great object to which he had devoted his life; he died before the second was prepared for the press; it its rough state, however, he had brought the work down to the conquest of Granada, which terminates the history of the Moorish dominion, but not of the Moors, in Spain. His unpublished papers consisted of a translation of the Canticles, with notes, which are said to display much erudition; and a collection of Arabic poems, with Spanish versions, and a dissertation upon the effect which the Arabian has produced upon the Spanish poetry. His library was sold in London; it was singularly rich in manuscripts, and in the rarest Spanish books. Conde's history of the dominion of the Moors in Spain has been translated into French by M. de Marlès, Paris, 1825, 3 vols. 8vo.

CONEY, John, an eminent engraver, was born at Ratcliffe Highway, and was apprenticed to the late Mr Byfield the architect, but never followed architecture as a profession. At the age of fifteen, he made his first drawing for sale. It was a view of Westminster abbey, and it found a purchaser in Mr Orme the printseller. In 1815, he published his first work; a series of eight views of the exterior and interior of Warwick castle, drawn and etched by himself. About the year 1816 he was engaged by Mr Joseph Harding to draw and engrave the fine series of exterior and interior views of the cathedrals and abbey churches of England, to illustrate the new edition of Dugdale's "Monasticon," edited by Sir Henry Ellis. These plates occupied the attention of Mr Coney for fourteen years, and are executed with consummate skill. In 1829, he commenced a series of "Engravings of Ancient Cathedrals, Hotels de Ville, and other public buildings of celebrity in France, Holland, Germany, and Italy, drawn on the spot, and engraved by J. Coney: with illustrative descriptions by Charles Heathcote Tatham, Esq." It was originally intended to be in twelve parts, but only eight were published. In 1831, he commenced another similar undertaking, half the size of the first work, intituled, "Architectural Beauties of Continental Europe, in a Series of Views of remarkable edifices, civil and ecclesiastical, in France, the Low Countries, Germany and Italy, engraved by J. Coney from his own drawings, taken on the spot, with descriptions and historical illustrations by H. E. Lloyd." This handsome work consists of twenty-eight large plates, and fifty-six vignettes. A view of the interior of the cathedral of Milan, the same size as the larger work, was published after Mr Coney's death, for the benefit of his widow. Mr Coney was employed by Mr Cockerell, the celebrated architect, to engrave a very large general view of Rome, and another plate as a companion to it, which has not yet been published. He also engraved numerous plates for the account of the law courts at Westminster, lately erected by Sir John Soane. He died on the 15th August, 1833, aged forty-seven.

CONGLETON; a market-town in Cheshire, seven miles from Macclesfield, twenty-four from Manchester, and fifty-eight from Birmingham. It is situated upon the south of the river Dane, over which is a handsome bridge, erected in 1782. A charter of incorporation was granted by James I., in 1625, under which the town was governed until September, 1835, when the new municipal act directed it to be governed by a mayor, six aldermen and eighteen councillors—the corporate body to be styled the "mayor, aldermen and burgesses of the borough of Congleton;" it likewise divided the town into three wards. In 1637, the celebrated president Bradshaw served the office of mayor of Congleton. The original manufactures of Congleton consisted of gloves, and leather laces, called *Congleton points;* these have long since given place to a very considerable trade in the manufacture of silk, silk throwing, silk spinning, &c.: the first silk mill was established here in 1754, and the trade has greatly increased since then; the ribbon branch is also one of consequence in the town. The appearance of Congleton, although ancient, is clean and respectable, and that of the surrounding country very pleasing. Population in 1831, 9352.

CONIA, OR CONIINE; a vegetable alcali, discovered by Brandes in the hemlock, conium maculatum, of which it is the active and poisonous principle. It is an oily liquid, having a strong odour of hemlock. It is excessively poisonous, and appears, by the experiments of professor Christison, to cause death by inducing paralysis of the muscles used in respiration. Probably, if artificial respiration were kept up till the action of the poison passed off, life might be restored.

CONISBOROUGH; a parish in the west riding of Yorkshire: population in 1831, 1347. The village of Conisborough is of very high antiquity; by the Britons it was called *Caer Conan*, and by the Saxons *Cyning*, or *Conan Burgh*, both signifying a royal town; it must once have been a place of some importance, as it is handed down that it was the seat of a civil jurisdiction, which comprised twenty-eight towns. It stands on a lofty elevation, about six miles to the south-west of Doncaster, overlooking a rich and wooded country, through which the river Don meanders. The church, which is dedicated to St Peter, is an ancient and remarkable structure, exhibiting the several characteristics of the Norman, the early English, and the later or decorated styles of architecture; so that it has evidently been built at different periods.

Conisborough Castle figures in one of the principal scenes in "Ivanhoe." Its ruins still remain. Tradition assigns it a very remote antiquity, whilst several modern antiquaries seem disposed to attribute the foundation of the present structure to William, the first earl of Warren, to whom the surrounding estate was granted by William the Conqueror. It is, however, indisputable, that a strong-hold of some sort existed here during the times of the Saxons. Geoffrey of Monmouth, and some of our old historians, indeed, have carried back its origin to a period preceding the Saxon invasion of Britain, but the narrative which they give must be looked upon as fabulous. The Conisborough estate subsequently passed from the family of Warren, to Richard, earl of Cambridge, who assumed the name of Richard of Conisborough in consequence, it is said, of the castle having been his birth-place. After his death it passed into the hands of his grandson, king Edward IV., and remained in the possession of the crown for more than two centuries, when it was given by James II. to Lord Dover. It afterwards became the property of the family of its present possessor, the duke of Leeds.

CONWAY, OR ABERCONWAY; an ancient walled town, in Carnarvonshire, North Wales, situated upon the estuary of the Conway river, distant from Bangor thirteen miles, N. E. There are several small vessels belonging to this port, and ships are sometimes repaired here. The Conway river being navigable for ten miles above this place, a tolerable import-trade is carried on by means of flats, which can lower their masts in passing under the suspension bridge. Trefriw is the highest place to which vessels can reach, where a good quay is now formed, and slates exported in large quantities. Llanwrst, Llansaintfraid, Eglwys Vact, and other places, derive considerable advantage from the navigation of the Conway; bark, timber, and slate are the chief exports; coals and necessaries for domestic consumption the only imports. Population of town and parish in 1831, 1245.

The *Conway*, i. e. *the Chief River*, takes its rise in a pool called Llyn Conway, situated in the mountainous district above Penmachno and Yspytty, in the county of Carnarvon, constituting the boundary between the counties of Denbigh and Carnarvon, for a length of seventeen miles, to a townland adjoining Plas Madoc, whence, after a further course of about twelve miles, it falls into the sea below Conway. Few rivers in England or Wales, in so short a course, afford so great a variety of beautiful scenery, and contribute so much, at the same time, to the convenience of the counties through which it flows. Llyn Conway, and the early part of the river, abound in excellent trout, and flow through a most wild and romantic district. Below Liuna Hall, the Conway falls in a noble cataract, called the Falls of the Conway, about fifty feet, the stream of water shooting directly from one aperture in the solid rock, to a considerable distance, and then descending into a rocky basin, surrounded by hanging woods. The grand scenery is succeeded by the placid gliding of the stream through the beautiful and fertile vale of Llanwrst. One mile below this town, at Trefriw, the river becomes navigable. The river has been celebrated from a very early period for its pearl fishery.

The *fortress of Conway Castle* stands in a picturesque situation a short distance from the mouth of the river Conway, at the northern extremity of the county of Carnarvon. It was erected in 1284 by command of Edward I., as a security against the insurrections of the Welch. Soon after its erection, the royal founder was besieged in it, and the garrison almost reduced by famine to a surrender, when they were extricated by the arrival of a fleet with provisions. At the commencement of the civil wars, it was garrisoned in behalf of king Charles, by Dr John Williams, archbishop of York, who, in 1645, gave the government of it to his nephew, William Hookes. Two years afterwards, the archbishop was superseded in the command of North Wales by prince Rupert, at which he was greatly offended. He endeavoured to gain some redress from the king, but without success, and, enraged at the injury, he joined Mytton, the parliamentary general, and assisted in the reduction of Conway. The town was taken by storm, August 15th, 1646, but the castle held out till the 6th of November. It was afterwards granted by kirg Charles to the earl of Conway and Kilulta, who had scarcely obtained possession, ere he ordered an agent to remove all the timber, lead and other materials. He did not, however, reap the fruits of this Vandal order, for the vessel in which the materials were being conveyed to Ireland, was wrecked, and all the property lost. Thus unroofed and unprotected, the castle has suffered much from wind and weather, but it still presents a fine specimen of an ancient fortress. It is in the form of an oblong square, and stands on the edge of a steep rock, washed on two sides by an arm of the river. The walls are all embattled, and are ten or twelve feet thick. They are flanked by eight vast circular embattled towers, each of which formerly had a slender machicolated tower rising from the top.

The *Iron Suspension Bridge* crosses the river opposite the castle, and forms part of the communication between Liverpool and Dublin. It was commenced in 1822, with a view to supersede the dangerous ferry which formerly existed here;

designs for it were by Mr Telford, and it was opened to the public on the 1st of June, 1826. The towers, on which the chains rest, are built in the same style of architecture as the castle, so as to harmonize with it; and a slight effort of the imagination would lead us to suppose that the present structure was the original drawbridge of the ancient fortress. The chains of the bridge are fastened at the west extremity into the rock beneath the castle, and at the eastern end into an island rock, which is connected with the shore by an embankment, upwards of 2000 feet in length. The length of the bridge, between the supporting towers, is 327 feet, and the height of the roadway, above high water of spring-tides, about fifteen feet. An additional postage of one penny is charged for every letter conveyed over Conway Bridge, and this money is applied to the repayment of the sums advanced for the building.

COOKE, George, an eminent engraver, was born in London, January 22, 1781. His father was a native of Frankfort on the Main, who settled in England early in life, as a confectioner, and having realized a moderate competency, retired from business about thirty-five years ago. In the choice of a profession, George was probably influenced by the example of his elder brother, William, who had previously become the pupil of Angus, the publisher of a set of "Noblemen's and Gentlemen's Seats." In conjunction with William Cooke, and also separately, George Cooke executed many plates for the Beauties of England and Wales, which are marked with strong indications of a sedulous care and eagerness to excel the characteristics of all his productions. The extensive series of plates, illustrating Pinkerton's "Collection of Voyages and Travels," absorbed, for several successive years, the greater part of his attention. During the progress of this publication, William Cooke had projected and commenced the first edition of "The Thames," to which George Cooke contributed only three plates, Monkey Island, Temple House, and the Gateway at Tilbury Fort. "The Thames" was the precursor of "The Southern Coast of England," a work memorable on many accounts, and of incalculable importance for its action both on the public taste and on the art of engraving. The first number came out January 1, 1814, and continued at intervals until the appearance of the sixteenth and last, in the spring of 1826. Of this series of plates, George Cooke engraved one third. An improved edition of "The Thames" followed, containing some tasteful and elaborate specimens of graphic skill from his hand. For Hakewill's "Italy," and the "Provincial Antiquities and Picturesque Scenery of Scotland," he executed some interesting plates: in the former two of Naples, the Campo Vaccino of Rome and Florence; in the latter, Edinburgh from the Calton Hill, after Turner, Edinburgh from St Anthony's Chapel, and Edinburgh from the Braid Hills, both after Calcott. Of the Edinburgh views in particular it is not too much to assert that at the time of their appearance they were unequalled. In 1819 appeared Allason's "Pola" with thirteen plates, of which the frontispiece, a magnificent architectural composition after Turner, and five others, are from George Cooke's accomplished graver. On the 1st of May, 1817, appeared the first number of "The Botanical Cabinet," undertaken by him in combination with the Messrs Loddiges of Hackney. For many years he resided at Hackney, in front of Loddiges' garden. Ten plates, small indeed and slight, but full of accurate and tasteful discrimination, were supplied monthly by his indefatigable hand for nearly seventeen years; the last number, completing the twentieth volume, appearing in December, 1833. Mr Cooke died on the 27th of February, 1834, at the age of fifty-three. He was one of the founders of the Artists' Joint Stock Fund, a member of the Calcographic society, and one of the nine engravers united for the purpose of engraving and publishing the pictures in the National Gallery; in furtherance of which design, he had selected for his first plate, and made some progress in etching from the picture, Rubens's admirable landscape, presented to the Gallery by the late Sir George Beaumont. In the practice of his profession he deemed himself peculiarly fortunate, inasmuch as it fell to his lot to produce some of the earliest plates engraved from the works of Turner, Callcott, and Stanfield, respectively; the first in the "Southern Coast," 1814, the second in the "Provincial Antiquities of Scotland," 1819, and the third in his own "London," in 1827. He left a widow and six children.

COOKE, William, an English barrister, was born in London—where his father, a respectable jeweller, resided—in the year 1757, and received his education in the neighbourhood of the metropolis. He was a member of Lincoln's Inn, and was called to the bar in the year 1790. At an early period of his career he devoted himself to the study of the bankrupt laws, and at length acquired, in that department, a most extensive practice. It was creditable to the lord Chancellor Eldon to select him as one of the commissioners of bankrupts; an office which he honourably filled for many years. He principally distinguished himself as the author of a valuable work on the bankrupt laws, the first edition of which was published in the year 1785. It passed through several editions, and was long esteemed the best book on the subject. The seventh edition was edited by Mr Roots. In 1816, he was appointed king's counsel: but soon afterwards became so afflicted with severe and frequent attacks of the gout, that he was compelled to absent himself on many occasions from court, and at length gave up his attendance there, and confined himself to chamber practice,—answering cases, chiefly in bankruptcy, and taking arbitrations, of which kind of business he had a most extensive share. In 1818, he went to Milan, as a commissioner to take the depositions of witnesses against the late queen. When subsequently attacked in parliament for thus assisting in that investigation, he intimated that the matter had proceeded farther than he contemplated, and that he had not been fairly treated. He returned to England from this memorable mission in 1820, and resumed his attention to chamber business—answering cases and taking arbitrations, till he finally quitted the profession in 1825; having thus practised as a barrister for thirty-five years. After that time, he principally resided at his house at Lenham, in Kent, where he died in Sept., 1832. His reputation rested chiefly on his well-known book, which, however, he lived long enough to see reduced almost to a dead letter by new statutes, both on the rules of law and the mode of its administration.

COOTE, Charles, an advocate in Doctors' Commons; was the son of Mr John Coote, for many years a bookseller in Paternoster Row, and the author of several dramatic productions, none of which, we believe, were ever acted, although three of them were printed. He was educated at Saint Paul's school; was matriculated as a member of Pembroke college, Oxford, May 29, 1778, took the degree of B.A. April 10, 1782, and Dec. 30, 1784, was elected a scholar on the Benet or Ossulstone foundation in that society. He proceeded M.A. June 21, 1785; B.C.L. by commutation, July 10, 1789, and D.C.L. July 14, following, and was admitted into the chartered college of doctors of law on the 3d Nov. in the same year. Deeply imbued with classical learning and a love of literature, he soon applied himself to those pursuits which were most congenial to his mind. For some years he edited the Critical Review, at a time when Dr Southey, the late Mr Pinkerton, D Israeli, and other eminent literary men, contributed their talents to that well-known periodical. The first fruit of his application to original composition was the "Elements of the Grammar of the English Language," 1788—a work of deep research and learning, interesting both to the grammarian and to the philologist, and which was highly commended, and soon reached a second edition. He next wrote a "History of England, from the earliest dawn of record to the peace of 1783;" which appeared in nine volumes at different times from 1791 to 1797; to which he afterwards added another volume, bringing down the history to the peace of Amiens in 1802. Of this history it may be said, that it exhibits a clear narrative, with well drawn characters, and sentiments strictly constitutional and impartially just. About the beginning of the present century he published a "History of the Union with Great Britain and Ireland." In 1804 appeared his "Lives of English Civilians;" a unique work, which no one had hitherto attempted. In 1815 he published the History of Ancient Europe, a comprehensive work, upon which he bestowed much time and pains. Graii Elegia sepulchralis cultu Græco donata; 1794. Life of Julius Cæsar; 1796, 12mo. A Continuation to Russell's History of Modern Europe, from 1763 to the Pacification of Paris in 1815; two vols. 1818. The same, continued to 1825; Lond. 1827. A Continuation to Mosheim's Ecclesiastical History by Maclaine to the 18th Century; six vols. 8vo. 1811. History of Ancient Europe, with a Survey of the most important Revolutions in Asia and Africa; being a third volume of Russell's Ancient Europe; 1815. Dr Coote died, Nov. 19, 1835, aged seventy-six. Of a retired disposition, with much of that eccentricity and indolence which often accompany literary merit, he passed through his profession with credit and respect, but without that emolument which was perhaps due to his abilities had they been more exerted. Of a nervous and morbid temperament, and therefore easily yielding to despondency in any adverse state of his affairs, he was nevertheless cheerful and gentle in manners, and conscientiously upright in his dealings. He left three sons and two daughters.

CORAL. (*a*.) The substance called Coral appears to have been considered a vegetable production until about the year 1720, when M. de Peyronnel of Marseilles commenced a series of observations, by which he ascertained that coral, instead of being a plant, was the produce of a living animal of the polypi tribe.

The Coraliferous Polypus is a small, soft, whitish body, rounded in form, and presenting, on microscopic examination, a mouth, a stomach, and a root-like base. It propagates both by dividing its body into parts, which form an animal as complete as itself, and by ejecting eggs from its mouth. The method in which the polypus secretes the coral, which, when taken from the sea, is in stalks about a foot high and half an inch thick, is understood to be as follows: An egg or new [illegible], when ejected, falls upon some body, to which, from its gelatinous nature, it adheres. On this foundation it spreads and moulds itself, till at length from the middle of it a sort of excrescence rises upwards containing the germ of a new animal, which attains its growth by degrees, and sends up a similar extension. These deposit calcareous or chalky matter in the middle, and by the constant generation of new polypi, and the secretion of additional matter, the coral, at the end of ten years, which is the period necessary for its perfect growth, has attained the height and thickness mentioned. It is of various colours—red, vermilion, and white, the latter being most common, and consequently least valuable. When taken out of the sea, it is covered with moss and marine vegetable matter, and is generally somewhat softer and duller in hue than it ultimately becomes.

The coral fisheries form a very considerable trade in several parts of the Mediterranean. From the hollows and caverns of the rocks, where it takes root, the coral is brought up with nets; it also grows, but in less quantities, on the sides of the ocean crags. The greatest height to which it attains is never above a foot, and its usual thickness is about that of the little finger, though often much less. The most extensive fisheries are those carried on in the straits of Messina, off the Sicilian coast, and about three miles distant generally from the land. The fishermen have divided the whole tract, about six miles in length, into ten parts. Every year they fish only in one of these parts and do not interfere with it again till ten years have elapsed, for the purpose of bringing away only such coral as has attained its full growth.

The appearance of the coral as it is observed in the sea, is said to resemble a miniature forest, from its great quantity and branching character. The greatest portion is procured from a depth of from sixty to a hundred and twenty-five feet; but some fisheries are carried on to the depth of nine hundred feet. Those on the coasts of Marseilles, Barbary, and Trapani, are the principal rivals to the Sicilian fisheries in the European market, but none of them produce the coral in equal quantities, or of [illegible] quality, with the latter. From Messina [illegible] pounds are said to be exported annually, the price of which is so much affected by the colour and quality, that, while some of it is valued at two guineas a pound, other portions are considered not worth ten pence. The vermilion-coloured coral, being the rarest, is the most expensive. The common red, however, brings a high price also, when the quality is good. Chemical analysis has proved that the coral consists of carbonate of lime, a species of chalk, for it dissolves completely in aqua fortis, or nitric acid.

Though we may regard with some degree of wonder the production of stalks of coral by a small oyster-like polypus, our astonishment cannot fail to be increased when we consider, that, by an animal of the same size and species as the coraliferous polypus, whole reefs of great extent and even islands, have been founded and augmented. The animal or polypus that accomplishes this is called the Madrepore, and has long been erroneously considered as identical with the coral polypus; hence the masses of land alluded to have received the appellation of coral reefs and islands. These have never yet been found in any extent excepting in the Pacific and Asiatic seas, but in these immense waters the coral rocks and reefs are abundant.

The principal groups of islands of coral formation are, from the New Hebrides, eastward, the Friendly islands, Navigation islands, and the Society islands; and, to the northward of the latter group, the Marquesas. These groups are separated from each other by channels or seas, wider than those which separate the individual islands which form the respective groups; but all these waters abound with shoals and minor islets, which indicate the existence of a common base, and show that the processes by which they will hereafter be united above the level of the sea, are in constant operation.

The structure and progress of these islands towards a state of fitness for the habitation of man, has been thus described. At a vast but unknown depth, below the surface of the sea, the insects attach themselves to the upper points and ridges of rocks, which form the bottom of the ocean, and *many* of which, in the Pacific ocean, are supposed to be of volcanic origin. Upon these foundations, the little architects labour, building up by means of the secretion before described, pile upon pile of their rocky habitations, until at length the work rises above the sea, and is continued to such a *height*, as to leave it almost dry at low water, when the insect leaves off building upon that part. A solid rocky base being thus formed, sea-shells, fragments of coral, and sea-sand, thrown up by each returning tide, and broken and mixed together, by the action of the waves, become in time converted into a sort of stone, and thus raise up the surface higher and higher. The heat of the sun so penetrates this mass of stone, that it breaks off into flakes, and these flakes are again raised one upon another by the waves, at high water. The ever active surf continues to throw up the shells of marine animals, and other materials, which fill up the crevices between the stones, and the sand upon the surface being now undistributed, offers to the seeds of trees and plants cast upon it by the waves, a soil upon which they rapidly grow, and overshadow the dazzling whiteness of the new formed land. Trunks of trees, washed into the sea by the rivers from other countries and islands, find here a resting place, and with these come some small animals, chiefly of the lizard and insect tribes. Even before the trees form a wood, the sea-birds nestle among them, and soon the stray land-bird takes refuge in the bushes. At a latter period, man appears, builds his hut upon the fruitful soil formed by the corruption of the vegetation, and calls himself lord and proprietor of this new creation.

These islands vary in extent, as well as in the degree of *finish* to which they have arrived. Of thirty-two examined by captain Beechey, the largest was thirty miles in diameter, and the smallest somewhat less than a mile. They were of various shapes, and all formed of living coral, except one, called Henderson's island, which was partially surrounded by it; and they all appeared to be increasing in size by the active operations of the *Zoophytes*, which are gradually extending, and building up above the level of the sea those parts which are at present below the water. Twenty-nine of the number had *lagoons*, (or morasses) in their centres, within which, it has been observed, the smaller species of coral seek a quiet abode, and labour silently and slowly, in throwing up banks, which, in process of time, unite with islets that surround them, and at length fill up the *lagoon*, so that what was at first a ring of little islands, becomes one connected mass of land. All these islands are situated within the action of the trade wind, except one (Oeno,) which is on the verge of it, and follow one general rule in having their *windward side* higher, and more protected than the other, and not unfrequently, well wooded, while the other is only a half drowned reef, or wholly under water. At Gambier and Matilda islands this inequality is very conspicuous; the weather-side of both being wooded, and, of the former, inhabited, while the other sides were twenty or thirty feet under water, where they might be perceived equally narrow and well defined. One of these islands (Malden island,) presented the singular appearance of perpendicular coral cliffs, elevated eighty feet above the level of the sea; these were of dead coral, but the outside of the island was surrounded with a belt of living coral, sloping from the cliffs, to from three to twenty-five fathoms under water, after which it descends abruptly to a depth where a 200-fathom line does not reach the bottom. The surface of this island is flat; and it is not easy to account for its present elevation, unless by an earthquake or sub-marine volcanic explosion.

Gambier Group consists of five large islands and several smaller ones, the whole (as well as the five separate islands,) being enclosed in a reef of coral, forming an irregular diamond-shaped space. The older islands are volcanic, and the largest rises in two peaks, 1248 feet above the level of the sea. The outer belt of coral descends abruptly outside to an unfathomable depth, but slopes inward by a decreasing declination, to about 120 or 150 fathoms below the surface; and within this enclosure, a number of low islands are already formed, and others are in progress, rendering it almost certain that, in process of time, the whole space will become one island, each of the original islands being also inclosed with its own reef. These are inhabited by a race of men with fine Asiatic countenances, wearing mustachios and beards, and they appeared to be more civilized than those of many other islands. Specimens of spars, crystals, alumine, jasper, and chalcedony, have been procured on these islands by the naturalists who accompanied captain Beechey. They are covered with a deep soil, and well wooded with trees and evergreens of different kinds.

It is a fact worthy of remark, that on all these islands, a plentiful supply of fresh and sweet water may be obtained, by digging three or four feet into the coral; and that even within one yard of high water mark, such a supply is to be found. This is an important consideration to the navigators of those seas, where such a resource is so valuable, on account of the extreme heat to which they are exposed; and it shows also the powerful properties of the coral, in divesting the sea-water of its saline particles. These properties, which are probably *chemical*, and not merely the effect of filtration, have never been examined or experimented upon, but they furnish a subject of consideration for the naturalist, and the man of science.

Of the rapidity with which the coral grows, we are not in possession of sufficient information, on which to form a correct judgment. Matilda, or Osnaburg island, is supposed to have been only a reef of rocks, when the Matilda was wrecked there, in 1792; it is now an island, fourteen miles in length, and covered on one side with tall trees, and the lagoon in the centre is dotted with columns. The coral, therefore, has, probably made a rapid growth since 1792, although Captain Beechey found two anchors, of a ton weight each, and a kedge anchor, which he supposes belonged to the Matilda, thrown upon the sunken reef of live coral, and around these anchors, the coral had made no progress in growing, while some large shell-fish, adhering to the same rock, were so overgrown with coral, as to have only space enough left to open about an inch. It is probable, however, that the oxide proceeding from the anchors may have been prejudicial, as far as its effects extended, to the coral insect, and thus have prevented its growth. All navigators, who have visited these seas, state that no charts or maps are of any service after a few years, owing to the number of fresh rocks and reefs which are continually rising to the surface; and it is perfectly accordant with the instincts of animals, to continue working without intermission, until their labours are consummated, or their lives are extinct.

CORFE-CASTLE; a borough in the isle of Purbeck, on the coast of Dorsetshire, twenty-three miles from Dorchester. The population is mostly employed in the stone quarries and clay pits, for which the place is celebrated: the stone is exported to London, and the clay to the potteries in Staffordshire. Previous to 1832, this place had returned two members to parliament since the early part of the reign of Elizabeth. But it was disfranchised under the reform act, and is now united with Wareham in its elections. The constituency consisted of about fourteen resident, and thirty non-resident holders of burgage tenements, and the mayor was the returning officer. It was an ancient borough by prescription, and was incorporated by queen Elizabeth. The government was vested in the mayor and eight burgesses, who, after they had passed the mayor's chair, were called "barons." When the borough was visited under the commission of corporation inquiry, the corporate body refused to give any information respecting their charters and privileges; and from the nature and constitution of this body, and the situation in life of the inhabitants, no particulars on these points could be obtained by the commissioner. In his report it is stated that "the town of Corfe-Castle is of mean appearance, and presents no indication of present prosperity, or of progressive improvement. The census of 1831 shows that although there were at that time no uninhabited houses in the borough, there were also none that were in a course of building; that the number of inhabited houses was 156, the number of families occupying them 193, and the total population 960."

The *castle* is on the north side of the town, on a steep eminence, and a bridge of four high and narrow arches, which is thrown across a deep moat, now dry, connects it with the town. Edward the martyr was stabbed at the gate of this castle, by order of his mother-in-law, who, with her son, then inhabited it. It has been a place of considerable strength, and from its position on the southern coast, was doubtless regarded as of great importance to the protection of the kingdom. The castle was most probably the precursor of the town.

CORK, (*a.*) The importation of cork in a manufactured state, into this country, is virtually prohibited by a very high duty; and the import duty upon it in a rough state is also considerable, being eight shillings per cwt. The price of cork, including the duty, varies according to its quality, from £20 to £70 per cwt.

COS, now STANCO, (*a.*) The island of Cos is one of the most interesting and valuable in the Grecian archipelago. Like Patmos, it is classed among the Sporades; and its northern-most point is scarcely four miles from the coast of Asia Minor. It lies at the mouth of the great inlet in that continent, which in ancient times was called the Ceramic Gulf, and which now bears the appellation of the Gulf of Boudroon. Its length is about five-and-twenty miles, and its breadth about five.

The surface of this island is of a diversified character, presenting an agreeable intermixture of the most delightful plains with gentle hills, occasionally swelling into mountainous elevations, more especially towards the eastern side. The fertility of the soil has always been remarkable; the Greek geographer, Strabo, speaks of it as "very fruitful," in the age of Augustus; and the Venetian writers of the seventeenth century, picture it as "abounding in all things necessary to the human state." There are now extensive orange and lemon plantations close to the town of Cos; and the very large export of the fruits which they yield, to all parts of the archipelago, is one of the chief branches of the trade which the island still enjoys. Mr Turner characterizes Cos as being in the most wretched condition of all the islands which he had seen in the Mediterranean, with the single exception, perhaps, of Cyprus. The number of its inhabitants amounted formerly to 20,000; at the close of the last century it was reduced to 10,000, and twenty years ago it just exceeded 8,000, there being then about 5,000 Turks, 3,000 Greeks, and fifty Jews. We have few means of estimating the population at the present day; it has been stated as low as 4,000 souls. The causes of the decrease are to be found in the ravages of the plague, which has often carried off a third of the inhabitants,—in the consumption of the many wars which the Turks have waged within the last hundred years,—and in the loss occasioned by emigration.

COSMETICS, (*a.*) the term usually applied to those preparations which are employed to beautify the skin. The two most important objects of cosmetics are: 1st, to impart a red colour to the cheeks; and 2d, to whiten the other parts of the skin of the face and neck.

The substances which more or less resemble the natural red of the face are red sandal wood, alkanet root, Brazil wood, bastard saffron, and cochineal. The common *rouge* used at the theatres is prepared by pounding benzoin, red sandal wood, Brazil wood, and alum, in brandy. This mixture is then boiled until three-fourths of the liquid have evaporated: an intensely red paint remains, into which a piece of soft cotton is dipped, with which it is applied to the face. Vinegar is sometimes substituted for the brandy on the score of economy; but as both these fluids injure the skin, it is much more common to extract the colouring matter from the dye-woods, and form ointments therewith by means of balm of Mecca, butter of cacao, or spermaceti.

If the colour is too intense, it is mixed with finely powdered chalk. Another mode of making rouge is to mingle cinnabar (a compound of sulphur and mercury, of a vivid red colour) with chalk, and with some oily substance, to form an ointment. Such rouge is very injurious. *Rouge dishes* are also common. These consist of small saucers, containing a layer of rouge in a dry state, and are prepared principally in Portugal: they are imitated in London, but clumsily, since the colour is dirty and muddy. Two other preparations, called *Spanish wool* and *Oriental wool*, have been long known to and esteemed by, the dealers and consumers of rouge. Wool is impregnated with the colour, and formed into cakes about the size of a crown piece, by the Spaniards, and somewhat larger by the Chinese: the latter is most esteemed, since it affords (as a modern pharmacopist observes) "a most lovely and agreeable blush to the cheek." Both these descriptions of wool are imitated. *Colour Boxes*, beautifully painted and japanned, are also imported from China. But all the descriptions of rouge must give place to pure *carmine*, which for colour cannot be surpassed, and, unlike many of the former cosmetics, is said not to injure the skin. Carmine is obtained chiefly from the colouring matter of cochineal, an insect of Mexico.

Cosmetics for whitening the skin consist of washes and powders. The most esteemed washes are elder-flower water and rose-water; also cold-cream, the *ceratum album* of the Pharmacopœia. This is a compound of white wax, oil of almonds, and rose-water, and is useful for slight excoriations, tenderness of the skin, &c. A wash is frequently sold under the name of "Pearl-water," but it contains no preparation of pearl whatever, and consists of Spanish oil soap dissolved in spirits of wine with oil of rosemary. The choicest of all powders for the skin is "pearl-powder," a costly article, since it is prepared by dissolving real pearls (the small seed-pearls of the pearl-fishery) in an acid, and precipitating the powder by means of an alkali. This powder is also prepared at a cheaper rate from mother-of-pearl and also from oyster-shells; but these furnish a powder which is not impalpably fine, and they have also a shining appearance, which at once shows that art has been employed to whiten the skin; whereas the real pearl-powder more nearly resembles the appearance of the skin. The most successful imitation of genuine pearl-powder is bismuth powder, a fine white powder, which has this disadvantage, however, that it will turn black on coming in contact with fumes of sulphur or with sulphuretted hydrogen gas. Ladies frequenting spas should therefore be cautious in its use, for if the water contain sulphuretted hydrogen gas, they are apt, on taking a drink, to become suddenly "black in the face," to the great consternation of their friends and admirers.

COSTUME, (*a.*) The subject of costumes is curious and interesting. Dress is an object of universal attention. It occupies no small portion of our time and thoughts; it forms a distinct and important trade, or, we should be more inclined to call it, profession; it constitutes a very large branch of commerce. We should be somewhat at a loss to determine whether civilized or barbarous nations are most occupied by the cares of the toilet. Certainly a full dressed savage makes a wonderful display of art. His painted countenance and head, the nicely adjusted colours, the tortured hair, the elaborate ornaments, the pouch and moccasin skilfully embroidered with variegated porcupine's quills, the cloak of gorgeous feathers or cloth of bark, indicate plainly, that his attention has been directed with no little patience and contrivance to this all-important object. And we doubt not, that as much care is expended upon his toilet, as the votary of civilized fashion gives to his.

We should be almost afraid to compute how large a portion of time among civilized people is occupied, either in dressing, or in thinking about dress. Much less, probably, is so used in this country, than in others, where a stricter etiquette prevails; but we still think we are within bounds in supposing that one-third of the waking hours of the community, including what is employed in making and repairing, is devoted to the subject of dress.

Half-civilized nations, who show more sense in their costumes than any others, barbarous or refined, must, we imagine, be somewhat at a loss to account for their neighbours' bestowing so much attention upon a subject, which for them is entirely settled. Where a man, or still more a woman, knows what colours and what forms of dress she is to use, being the same precisely that her ancestors have worn for centuries, and where the idea of fashion never dawned, there can be but little time wasted upon dress. We only wonder, what the fair inhabitants of such a country can find to supply the place of that deep interest which the subject affords to the happier heirs of civilization. "What a monstrous idea!" we fancy some of our fair readers to exclaim; "a country where there is no such thing as fashion! where one must dress like one's grandmother; where there is no difference between morning and evening dresses; where there are no such things as walking dresses and carriage dresses, no distinctions of bonnets, and no change of forms! What becomes of the spirit of a woman in such a stupid country?"

What, then, are the causes of these differences in different countries? Why do the Persians at this day, dress as the Persians did in the days of Cyrus the Great, while the forms of British and French dresses have been constantly changing since the time of the Roman conquests? Is there a deep philosophy of dress to account for this? Is there any theory to explain why civilization makes changes in costume, or to account for each successive change?

These questions we do not pretend to answer. We will give our readers a slight sketch of some of the different remarkable costumes of ancient and modern times, and the various changes which have been made with the advance of civilization. Perhaps they may deduce some theory, to suit themselves, from the facts we shall present them. An ingenious observer might possibly discover in the costumes of different nations, a harmony with the prevailing tastes and the general character of the people. There is certainly no way in which taste, whatever it is, displays itself more than in dress; and, as far as nationality of costume exists, there might perhaps be found a certain correspondence or identity in the taste in dress and in the fine arts. Thus the Egyptian costume would possess a character very different from that of Greece or Rome. The dress of one age would differ in style from that of another in the same country. Each would be marked by the peculiar taste and the prevailing spirit of the time. The costume of a cavalier in the thirteenth or fourteenth century would be as different from that of a Roman in the days of Cicero, as a Gothic church is from a classic temple; and each costume, in point of taste, might be marked with the same spirit that inspired the architecture of the different periods.

Nothing can be more ungraceful than the costume of the Egyptians, as it is represented in their sculpture. In the Capitol at Rome, there is a collection of very ancient Egyptian statues. The dress consists of a cloth or mantle, wrapped closely round the body, so as to show the whole outline of the form, and descending in some to the knees, in others to the feet; and bound so tight as to fetter the limbs. The arms are left bare; on the head is a small cap, shaped in some like a coronet, from each side of which descends a sort of wing or pendant, making the neck appear of the same breadth as the shoulders; the whole costume, giving the living man, as near as possible, the look of a mummy. A representation of a priest, in Denon's work on Egypt, also shows very nearly the same costume. The cap and its grotesque wings are precisely like those in the statues; and the dress consists of a tunic descending not quite to the knees, and fitting close to the body. Now there certainly is some resemblance in the stiff, graceless, and square form of this costume, to the equally stiff, graceless, and square architecture of Egypt. That people were certainly distinguished by bad taste, but there was a harmony in its badness; their colossal structures and their gigantic statues, their sphinxes and their other monsters, all are marked with the same monstrous taste. There is a resemblance to these in the costume. We do not mean that there is an imitation. The caps are not made in the shape of a pyramid or a sphinx, nor the vest in the form of any other structure. But there is in the costume a certain taste, which is obviously the same that gave birth to the architecture. It is essentially Egyptian, as strongly marked as the pyramid or obelisk, and could not be mistaken.

The Asiatic dress is entirely different. The costume of the Parthians was a long flowing tunic or gown, reaching nearly to the ancles, and gathered round the waist with a girdle. The sleeves, which reach to the wrists, were made tight, so as to show the form of the arm; the trowsers were loose and gathered at the ancle; and the cap was low, and shaped somewhat like a coronet. This dress, as represented in ancient paintings, resembles almost exactly the costume of the Persians at the present day. The dress of the Persian ambassador, whom we met in Paris a few years since, might have been thought a copy from the antique, so closely did it correspond to the representation of the ancient Parthian. The Parthian sovereigns are represented on the coins, sometimes bareheaded, with long bushy hair and profuse beards very elaborately curled, sometimes wearing a cap in the form of a truncated cone, inverted. The Medes and Persians generally wore a conical cap, sometimes truncated and much ornamented. The inhabitants of the countries bordering on the Black Sea and of the Archipelago, used the Phrygian cap, with the top bent forward, and long flaps descending to the shoulders.

We have particularly mentioned these various head-dresses, to show that all antiquity boasted nothing in the way of head-gear so absurd as the hats of the present day. Of all the articles of dress which the present age abounds in, there is none which we contemplate or wear with so little complacency or patience as a hat. For the fashion of other parts of dress, we can see some reason, but we are at a loss to discover the philosophy of this. It can hardly be called a covering for the head, as it only rests on the top, never covering the ears. The tall cylinder of the crown runs up several inches above the head, leaving a large space, which, for all we can discover, is perfectly useless. Then the hat must bind the forehead closely, otherwise a breath of wind will take it off. The most sensible head-gear which is worn in these days, is the cap which sailors call a south-wester, fitting close to the head, and having a sort of cape which descends over the shoulders. But any kind of cap is better than a hat, which, we doubt not, is the invention of some unhappy wretch whose fair proportions nature had curtailed; and who endeavoured to make up for his deficiencies by a lofty head-dress. Fashion, however, dictates, that hats shall be genteel, and caps otherwise; and who shall dare to dispute her decree?

The warlike dress of the Amazons, if we may believe the paintings upon antique vases, was very tasteful. It consisted of a tunic reaching not quite to the knee, and confined at the waist with a girdle. It came up round the throat and fitted close to the form above the waist. The sleeves were made tight and reached to the wrists. Over this tunic was worn a short cloak or mantle not longer than the tunic, fastened round the neck and flowing from thence. This garment resembled very much the short Spanish cloak worn by cavaliers in the sixteenth century. Finally, these ladies, with extreme propriety, and in keeping with their character, wore pantaloons. They were made to fit close, showing the form of the leg completely, and in addition to their elegance, must have been extremely convenient. With the war dress, the Amazons wore a helmet, sometimes terminating in the beak of a griffin, the jagged crest of the animal forming the summit or back of the helmet. In peace these ladies condescended to put on the ordinary female costume.

In general, the Asiatic costume forms a remarkable contrast to that of Egypt; the one, loose, flowing, and graceful; the other, so contrived as to fit close to the form, and yet to make it appear more awkward,—without a single fold, square, dead-like. There is something very grand and imposing in loose and ample robes. We attach the idea of princely magnificence to them, and man seems to acquire double grandeur when thus arrayed. The fact is, that this mortal must put on a dress in order to look respectably. One tailor is not enough to make a man. He is not completely made till he has had nine of them at work upon him.

We come now to the classic costume, which we shall find to be completely in keeping with the taste displayed by the Greeks and Romans in other things. The first thing we notice with regard to the Greeks, is, the great care bestowed upon the arrangement of the hair. Writers on costume distinguish the different ages, by the changes in the manner of arranging the hair. The earliest style was remarkable for primness, the hair being dressed into symmetrical curls much in the corkscrew form, and the dress was made to correspond with this by plaiting it into straight and stiff folds. The hair was dressed in the same way for men as for women. After a little time, it became the fashion to gather all the hair hanging down the back, by means of a ribband, into a single bunch, leaving only two or three long slender ringlets hanging in front of the ears. At a later period, this bunch of hair hanging down behind, was gathered up and doubled into a club, while the side locks were allowed to descend as low as the breast. In the fourth era of Grecian barbarism, these long ringlets gradually shrunk away to a number of short curls about the ears, leaving the neck quite free. The hair and beard were arranged with extreme care, and were made to resemble the cells of a beehive, or a network of wire, the Greeks being very skilful in the use of the hot tongs.

The dress of Greek females was a tunic or gown, reaching to the feet, and fitting round the neck, with sleeves reaching to the elbows. Over this, was a second garment, which was intended only as an additional protection to the upper part of the person. It was a square piece of stuff, folded double, so as to show only half of the original width, and was worn with the doubled part upwards, so as to display the embroidered edge more fully, hanging down. This garment was suspended round the back and chest, passing under both arms. The centre was brought directly under the left arm, so that the ends met and hung down under the right; and it was kept in place by two clasps or buttons which fastened together the front and back part over the shoulders. The outer garment was called the *peplum*, and was used more on occasions of ceremony than for ordinary convenience, as it was very long and ample, and from the manner of putting it on must have been inconvenient to the wearer. It was sometimes wound double round the body, first under the arms, and then over the shoulders, and was not fastened by any clasps or buttons, but was kept on by the intricacy of the folds. The *peplum*, and the *pallium* or men's outer garment, gave occasion to a great display of taste in the manner of wearing, as the various combinations seem to be almost endless. Every variety which human ingenuity or fancy could devise in the manner of wearing this part of the dress, may be seen in the pictures on ancient vases; and it is supposed that the different degrees of grace, in the arrangement of this garment, indicated the degree of refinement in the wearer. At times the mode of wearing it was made to indicate the state of mind of the individual. Thus, it was drawn over the head by persons in deep affliction, or engaged in any solemn religious ceremony. For both of these reasons it was represented as drawn over the head of Agamemnon in the celebrated classical painting of the sacrifice of his daughter Iphigenia. Finally, the *peplum* served as a protection to the head in stormy weather; though travellers provided themselves with a flat-broad-brimmed hat, which they called a *petasus*, tied under the chin like a bonnet.

The dress of the Roman ladies was much like that worn by the Greeks. It consisted of the tunic, or *stola*, reaching to the feet, with long sleeves worn next the skin; then the *amiculum*, formed of two square pieces of stuff fastened on the shoulders; and, lastly, the *palla*, corresponding to the Grecian *peplum*, and very similar to the men's toga, except that it was more ample and was embroidered. The Roman ladies bestowed infinite pains upon the dressing of their hair. Like the Greeks, they used the curling tongs; and a number of antique busts, portraits of Roman ladies, in the Gallery at Florence, display a degree of care, ingenuity and skill in the coiffure, that would baffle the most accomplished hair-dresser of Paris at the present day. The hair was plaited, twisted, or woven, into the most elaborate and exquisite forms. Coronets, wreaths, diadems, baskets of flowers, clusters of grapes, were all represented by the cunning hand of the Roman hair-dresser. When the natural colour of the hair was not agreeable, it was stained, by means of a pomatum made of the dregs of vinegar and the oil of mastic. And when, after the conquest of Great Britain, the light golden hair of the Caledonian maidens gained the admiration of their conquerors, the ladies of Rome aspired to the same attraction by filling their hair with gold dust. They also used white and red paint for the face, besides a variety of washes and cosmetics.

The Roman ladies were very fond of jewels, and carried their passion for them to such an excess, as to become occasionally the subject of legislation. The principal personal ornaments were ear-rings, necklaces, and finger rings. The ear-rings were of gold, pearls, and precious stones, and were sometimes of immense value. Necklaces were also set with gems, and very precious, and were worn by men as well as women; every schoolboy will recollect the story of Manlius Torquatus. In the manufacture of ornamental chains, the Roman or Greek jewellers displayed great skill. There was one kind of chain, in particular, wrought with such consummate art, that modern jewellers have in vain attempted to imitate it. The links are so cunningly shaped and knit together, that, when the chain is extended, it resembles a single bar of gold; and yet it is perfectly flexible in every possible direction, like a small cord. Chains of this kind in the most perfect preservation have been found in Pompeii. Finger rings were of various forms and devices, commonly set with engraved gems, and used as seals. A remarkable mention of these is in Cicero's Oration against Catiline, in which he speaks of the impress of the ring of Lentulus in his intercepted letter. Among the ornaments discovered in Pompeii, is a breast-pin, to which is attached a Bacchanalian figure with a *patera* or goblet in one hand, and a glass in the other; having bat's wings attached to his shoulders, and two belts of grapes passing across his body.

Indeed, if we may judge from the symbols of ancient coquetry, which that living tomb, Pompeii, has yielded up, the refinement of the toilet was as great with the Romans, as at the present day; and Pope's lines are as descriptive of a morning scene in the chamber of a Roman belle, as of a modern fine lady:

> "Unnumbered treasures ope at once, and here
> The various offerings of the world appear;
> From each she nicely culls with curious toil
> And decks the goddess with the glittering spoil.
> This casket India's glowing gems unlocks,
> And all Arabia breathes from yonder box;
> The tortoise here and elephant unite.
> Transformed to combs, the speckled and the white.
> Here files of pins extend their shining rows,
> Puffs, powders, patches."

How the poor things managed without the "Bibles" and "billets-doux," which should complete the line, is more than we know; perhaps some of our fair readers can suggest the substitute.

The dress of the men consisted of the *tunic*, which reached nearly to the knees, and had no sleeves. It was fastened by a girdle above the hips; and a stripe of purple, on the right side of this garment in front, indicated, by its breadth, whether the wearer was of senatorial or equestrian rank. Over this, was worn the distinguished garment of the Romans, the *toga*. It has been disputed by antiquaries, whether the form of this garment was round or square. Mr Hope thinks it was semicircular. Beckmann says, that the Roman weavers made each piece of cloth just of the proper size for a toga, so that when it came from the loom it was ready for use, and probably had no seam. It was a loose robe or cloak, extending from the neck to the feet, closed below the breast, but open above, and without sleeves. It was ample, flowing, and graceful; and gave a dignified and majestic air to the wearer.

The materials used by the Romans in the manufacture of their garments, were chiefly linen and wool. The *toga* was woollen, and generally white, though mourners wore it black. Silk began to be imported in the latter days of the republic, nor did the Romans at first understand the manufacture of it. Afterwards they began to weave it, intermixing woollen thread. The fabric thus formed, was called *vestes coæ*, as it was invented in the island of Cos. It was very thin, like muslin or gauze, and is spoken of by Seneca as "woven wind." The term *bombycina*, undoubtedly the origin of our word *bombazine*, derived from *bombyx*, a *silk-worm*, was applied to this fabric.

The Romans commonly went with the head bare or only covered with the toga, except at sacred rites or festivals, on journeys, and in war. At the *Saturnalia*, they wore the *pileus*, or woollen cap, which was never permitted to be worn by slaves. They probably assumed it particularly at this festival, as a mark of distinction, because slaves during the Saturnalia were allowed almost unlimited license, and needed something to admonish them of their real condition. Roman travellers, like Greek travellers, wore the *petasus*.

There were various coverings for the feet. The *calcei* were somewhat like our shoes, and covered the foot entirely. They were provided with strings or lacings, which sometimes covered the ancle. Senators wore on the top of the *calceus*, a gold or silver crescent, as a mark of their order. The shoes of men were usually black; those of women were white, red, yellow, or of other colours. Buskins were also worn, covering only the sole of the foot and laced above. Soldiers wore boots reaching as high as the ancle. The legs were protected by bands of cloth wound round them from the thigh downwards.

The distinguishing marks, in the costume of the Greeks and Romans, were elegance, majesty, and grace. Their robes were loose and flowing. They were never intended to display the form, but to hang loosely around it, suggesting grace and beauty to the imagination, while they actually concealed the work of nature. The dress of these nations had a good effect upon the art of sculpture. In their costume, form was of much more consequence than colour; and it could therefore be perfectly represented by the marble. The sculptor at the present day is embarrassed in the representation of his hero. The modern costume, which, especially with military men, depends as much for its effect on colour as on form, and perhaps even more, cannot be adequately represented by marble; and the artist must clothe his statue in some foreign or imaginary garb, which every one knows he never wore. The Greek sculptor, on the contrary, found in every man he met a model, which he might study to advantage. And the immense variety of arrangement, which the ample robe allowed, must have constantly suggested to him some new idea with regard to the arrangement and flow of drapery; a subject of sufficient importance to occupy one chapter in Flaxman's admirable volume of Lectures. We can now do no more than hint at the effect thus produced on one of the fine arts.

We must hasten on to the dress of modern ages. The dress of the different Christian nations of Europe has not greatly varied in the same century; and the description of the costume of one nation may be taken as a specimen of all. We shall, therefore, give an account of some of the most remarkable costumes of England. The dress of the Anglo-Saxons consisted of shirts; tunics both long and short; surcoats, or sleeved gowns; cloaks or mantles; conical or Phrygian bonnets; shoes open in the middle, or on each side, and stockings. The legs were protected by breeches reaching to the knee. The hair was parted on the middle of the head, and hung down on each side, and the forked beard was worn. Women of the same era wore under-tunics with sleeves; upper-tunics like gowns, mantles or cloaks; kerchiefs or hoods; high-quartered shoes, and stockings.

But our readers will form a better notion of the Saxon dress from the following description, than it is possible to convey by our dry details. We quote from Scott's picture of Cedric the Saxon. "His dress was a tunic of forest green, furred at the throat and cuffs with what was called minever; a kind of fur inferior in quality to ermine, and formed, it is believed, of the skin of the grey squirrel. His doublet hung unbuttoned over a close dress of scarlet, which sat tight to his body; he had breeches of the same, but they did not reach below the lower part of the thigh, leaving the knee exposed. His feet had sandals of the same fashion with the peasants, but of finer materials, and secured in front with golden clasps. Behind his seat was hung a scarlet cloth cloak, lined with fur, and a cap of the same materials richly embroidered, which completed the dress of the opulent landholder when he chose to go forth."

Such was the general outline of the costume worn in England from the beginning of the tenth century. Some changes became visible in the fourteenth century. The head-covering for men assumed a great variety of forms, some of them very fantastic. They might be seen in all the variety of wreathed, turban-shaped, flapped, rolled, skull-capped, brimmed, with projecting ends, conical and cylindrical with or without brim, night-capped, tied under the chin, sometimes wrapped over the head, escalloped, or simple bandages round the hair, &c. Spencers were also worn, buttoning in front and without sleeves. The shoes were long-pointed, and were joined to the stocking so as to form but one garment; and were differently coloured on each leg. The shirt, in the time of the Saxons and Normans, formed no ostensible part of the dress; but, at a later period, when tunics became doublets or waistcoats, they were made [illegible] open upon the neck and bosom, so as to display the shirt collar, which was richly embroidered.

In the fifteenth century, the costume became still more fanciful and grotesque. The doublets were cut and slashed, and nearly [illegible] at the elbows, in order to show the fineness of the shirts. The dress of the two sexes could hardly be distinguished from each other; men wore petticoats over their lower clothing; the doublets were laced in front like stays, over a stomacher; and the gowns were open in front to the girdle, and again from the girdle to the ground. The women wore gowns, enormous trains, and corsets over the other dress; and were particularly distinguished by two peculiarities, the horned and the steeple head-dresses; the former consisting of two elevations like a mitre worn edgewise, the other having only one elevation, of a pyramidal or conical form, and very high. Addison dates the existence of these enormous head-dresses a century earlier, though they probably appeared both in the fourteenth and fifteenth centuries. He says, "I do not remember in any part of my reading, that the head-dress aspired to so great an extravagance as in the fourteenth century; when it was built up in a couple of cones or spires, which stood so excessively high, on each side of the head, that a woman, who was but a pigmy without her head-dress, appeared like a Colossus upon putting it on. Monsieur Paradin says, that these old-fashioned fantages rose an ell above the head; that they were pointed like steeples, and had long pieces of crape fastened to the tops of them, which were curiously fringed, and hung down their backs like streamers."

In the sixteenth century, men wore gowns, boddices, close pantaloons, boots coming up to the middle of the thigh, cloaks, slashed doublets, petticoat breeches, and the remarkable trunk hose, which were breeches sitting close to the leg, and stuffed out enormously about the hips. The women appeared in long boddices, with or without skirts, and the famous farthingale, which was an immense hooped petticoat; they also invented a kind of doublet with high wings and puffed sleeves, a costume in full fashion in the beginning of the reign of Elizabeth. To give our readers a better notion of the costume of this period, we will again quote from Scott, who was extremely correct and minutely accurate in his descriptions. Whom, then, can we select, as a more worthy representative of the fashions of the sixteenth century, than that renowned cavalier Sir Piercie Shafton? His first appearance is thus described: "He has a crimson velvet bonnet, and long, brown hair falling down under it, and a beard on his upper lip, and his chin clean and close shaved, save a small patch on the point of it, and a sky-blue jerkin slashed, and lined with white satin, and trunk hose to suit." Again, in speaking of his wardrobe, Sir Piercie gives the following catalogue, which might drive a modern dandy to despair. "My rich crimson silk doublet, slashed out and lined with cloth of gold, which I wore at the last revels, with baldric and trimmings to correspond; also two pair of black silk slops, with hanging garters of carnation silk; also the flesh-coloured silken doublet with the trimmings of fur, in which I danced the salvage man at the Gray's Inn mummery." "There are four suits of as pure and elegant device as ever the fancy of a fair lady doated upon, every one having a treble and appropriate change of ribbons, trimmings, and fringes, which, in case of need, may, as it were, renew each of them, and multiply the four into twelve. There is also my sad-coloured riding suit, and three cut-work shirts with falling bands," &c. Such were the wonders of the wardrobe in the sixteenth century. The changes of dress since that time have been great. The subject is ample and amusing, as connected with politics, literature, and religion, as well as fashion, but we forbear to pursue it.

COTTON (*a.*) The cotton-wool of commerce is the delicately-soft down which surrounds the seeds of a tree, or rather shrub, found in most of the warmer latitudes of the earth, both in the old and new world. Of the genus to which this tree belongs there are at least nine or ten different species, nearly resembling each other; the most common is the *Gossypium herbaceum.* The cotton plant is extensively cultivated in different parts of the East Indies, in which countries it requires three seasons to bring the seed to maturity. It is also cultivated to a considerable extent in the Mogul empire, in the kingdoms of Siam and Pegu, in Sumatra, Persia, Arabia, Asia Minor, Natolia, Smyrna, and Aleppo: also, in Sierra Leone and other parts of Africa; particularly in Egypt, where, within these few years past, a very superior quality of cotton has been raised. The first imported into this country from Egypt was in 1823, and it now ranks in price and quality next to Sea-Island cotton. The cotton plant is also cultivated in Candia, Cyprus, Malta; and attempts have recently been made to cultivate it in Spain and the south of France. It is grown in some parts of the Russian empire: in Astracan, Orenburg, Levant, &c. But the chief supply of the British market is from South America, the East and West Indies, and the southern states of the American union; in all of which countries it is cultivated to a great extent.

The mode of cultivating the cotton plant depends upon its being *annual* or *perennial.* In general, the *annual* cotton-tree thrives best in a dry gravelly soil; it is also said to answer better in old than in newly cultivated lands. An exposure to the east, where the country is hilly, is considered by some to be of importance. The planters generally commence preparing their lands in February, and put in the seed during March and April. Holes are made in rows, at the distance of from seven to eight feet; into each of these an indefinite quantity of seed is laid, which in a short time begins to germinate; and as soon as the young plants rise to the height of six or seven inches, they are all, except two or three of the most vigorous, pulled up by the roots. The surviving plants are pruned twice before the month of August, so as to keep them down to the height of about four feet. This is absolutely necessary, as, when there is a great abundance, the difficulty of gathering the cotton is increased, without any addition to the quantity. At first, great attention is requisite to keep down the weeds and grass, which, if not eradicated, would soon destroy the young plants. The plant on its first appearance, and for a few weeks, is extremely tender; the slightest frost hurts or kills it. When this happens, a new crop is usually sown, though with dubious success. Light showery weather is said to be most favourable to the plentifulness of the crop. The gathering season commences partially in August, but is general in September and October, and continues when the weather is fine and dry, till Christmas, as the pods ripen and open gradually. On the coast of Guiana and the Brazils, the *perennial* cotton-tree is almost exclusively cultivated, and subjected to a different mode of treatment. Throughout the United States, the cotton-tree is an annual plant, and is not cultivated north of latitude 35°; but some successful experiments as to the possibility of raising it, have been made in the neighbourhood of New York, or latitude 40°.

The cotton-plant is very liable to be injured by spring frosts, or very wet seasons, but more particularly by a most destructive insect called chenille, a caterpillar, which has been known to destroy whole fields of the most promising crops in a single night. Several travellers have given various accounts of this insect. Dr Chisholm describes it as being very beautiful, and about an inch in length, with stripes of white down the back, and one on each side, the intermediate spaces being a fine glossy black. The head is round and corneous, armed with two lateral corneous jaws, forming a powerful instrument of destruction. The most singular circumstances respecting this insect, are the fragrant scent that is emitted from the plant on which it feeds, though neither the plant nor the insect possess any scent whatever when separate: also the manner in which the ova are sometimes preserved for a whole year, without any appearance of the chenille, and resisting the efforts of the planters to destroy them, by the use of fire and other methods; and the surprising speed with which its ravages are carried to the most distant parts of the plantation.

After the cotton is gathered, it is exposed to the rays of the sun, on a tile or wooden platform, for two or three days, till it is perfectly dry and hard. The seeds are then separated by passing through between two wooden rollers which are slightly grooved, and about five-eighths of an inch in diameter; this is called ginning the cotton; and when ginned, it is carefully picked, to free it from broken seeds, dried leaves, or yellow locks of cotton, &c. The practice of switching the cotton was introduced but not generally adopted, because not approved of by manufacturers. The cotton is afterwards compressed into bales, which is done by means of a screw-press; in this state it is sent to Europe.

Cotton is distinguished in commerce by its colour, and the length, strength, and fineness of its fibre. White is usually considered as characteristic of secondary quality; yellow, or a yellowish tinge, when not the effect of accidental wetting or inclement seasons, is considered as indicating greater fineness. There are many varieties of raw cotton in the market; their names being principally derived from the places whence they are brought. They are usually classed under the denominations of *long* and *short-stapled*. The best of the first is the *Sea-Island* cotton, or that brought from the shores of Georgia; but its qualities differ so much, that the price of the finest specimens is often four times as great as that of the inferior. The superior samples of Brazil cotton are reckoned among the *long-stapled*. The *Upland* or *bowed* Georgia cotton forms the largest and best portion of the *short-stapled* class. All the cottons of India are short-stapled. The inferiority of Bengal and Surat cotton is sometimes ascribed to the defective mode in which it is prepared; but it is doubted whether it can be grown in India of a better kind. The raw cotton of the Indian islands has hitherto been almost entirely consumed on the spot. A small quantity of very superior cotton has been imported from New South Wales.

The manufacture of cotton has been carried on in Hindostan from the remotest antiquity. Herodotus mentions that, in India, there are wild trees, that produce a sort of wool, superior to that of sheep, and that the natives dress themselves in cloth made of it.

The earliest notice of cotton being brought into England appears about the year 1430, and the whole quantity imported, which was extremely small, evidently reached us by the Mediterranean traders. It was not before the beginning of the seventeenth century that any progress seems to have been made in the manufacture of this useful article. The first accredited account we have is in the year 1641, when it is said "the townsmen of Manchester buy cotton-wool in London, that comes from Cyprus and Smyrna, and work the same into fustians, vermilions, and dimities, which they return to London, where they are sold, and from thence, not seldom, are sent into such foreign parts where the first materials may be more easily had for that manufacture." But even as late as 17[illegible] cotton was but little known in England as an article of commerce and manufacture. Of its progress subsequent to that period some account will be found in the body of this work. An idea may be formed of its rapid increase from the following brief statement. The quantity of cotton consumed in Great Britain was,

In 1775	[illegible]	lbs.
1790	[illegible]	—
1806	[illegible]	—
1820	[illegible]	—
1831	[illegible]	—
1838	[illegible]	—

Thus in the course of fifty years the consumpt of cotton may be said to have risen in this country from one million to 500 million of pounds. Previous to 1793, the cotton used in Britain for the manufacture of the coarser articles was (with the exception of a small quantity from India) wholly grown in our own and the French West India islands; that for the better kind of these goods, was raised in Surinam, or Demerara and Berbice; that for the fine goods was grown in Brazil, and that for the very few fine muslins, then manufactured, in the isle of Bourbon.

The advantages of different countries for the cotton manufacture, depend, in a great measure, on their natural condition, long habits, and laws. *England* is superior to most in the abundance and cheapness of iron for machinery; in coal for warming buildings and moving steam power; in suitable climate; ingenuity, experience, and skill of mechanics, from great division of labour, &c.; in greater commerce to find the best markets; capital at low interest, and wages not high; and property secure. But taxes in this country and raw material are high, and living is more expensive than in some other places.

The *United States*, by numerous and cheap water-falls, have a good substitute for steam, and will soon have coal as low for warming; have equal ingenuity, but iron and coal are dearer; raw material and living both lower, and property as secure; wages and capital higher; much less taxation; and a protective tariff.

The subject of *wages* in the different kinds of manufacture, and in different countries, has not been discussed in detail. It may be interesting to many to know that the average wages in 18[illegible], in the United States, of all employed in a cotton factory, were about 14s. 11d. sterling per week; in England, about 10s., sometimes 12s.; in France, only 5s. 6d.; in Switzerland, 4s. 5d.; in Austria, 3s. 9d.; in Saxony, 3s. 6d.; and in India, from [illegible] to 2s. per week.

The following Tables will place before the reader many interesting facts regarding the Statistics of this most important branch of Manufacture.

Statement of Import of Cotton-Wool into Great Britain, from 1826 to 1836, *inclusive.*

IMPORT.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.
American,	395,852	646,776	444,390	463,076	618,527	608,887	628,766	654,786	733,528	763,199	764,707
Brazil,	55,590	120,111	167,362	159,536	191,468	168,288	114,585	163,193	103,646	143,572	148,715
East India,	64,699	73,738	84,855	80,489	35,019	76,764	109,298	94,698	89,098	117,965	219,493
Egyptian, &c.,	47,621	22,450	32,889	24,739	14,752	38,124	41,183	3,893	7,277	43,721	34,953
West India,	18,188	30,988	20,056	18,867	11,721	11,304	8,490	13,646	17,485	22,796	33,506
TOTAL, ... Bales,	581,950	894,063	749,552	746,707	871,487	903,367	902,322	930,216	951,034	1,091,253	1,201,374
Do. in lbs.—Millions&10ths,	171·7	270·9	219·6	222·0	261·4	280·0	287·8	304·2	320·5	361·2	410·9
Aver. Wgt. of Import,..lbs.	296	303	293	297	300	310	319	327	337	331	342

Growth and Consumption of the United States of America.

YEARS.	GROWTH.	CONSUMPTION.
1826 — 1827	937,000	103,483
1827 — 1828	712,000	120,593
1828 — 1829	857,744	118,853
1829 — 1830	976,845	126,512
1830 — 1831	1,038,848	182,142
1831 — 1832	987,477	173,800
1832 — 1833	1,070,438	194,412
1833 — 1834	1,205,394	196,413
1834 — 1835	1,254,328	216,888
1835 — 1836	1,360,725	236,733
1836 — 1837	1,422,930	222,540
1837 — 1838	1,801,497	246,063

Growth of Egypt.

1831 — 1832	113,626
1832 — 1833	79,304
1833 — 1834	36,085
1834 — 1835	96,048
1835 — 1836	115,900
1836 — 1837	175,000
1837 — 1838	80,000

Import of Cotton into Great Britain in 1837 *and* 1838.

	LIVERPOOL.		LONDON.		GLASGOW.		TOTAL IMPORT INTO G. BRITAIN.	
	1837.	1838.	1837.	1838.	1837.	1838.	1837.	1838.
Growth of U. S. from New Orleans and Natchez,..	344,374	466,039	2,595	7,060	55,686	44,125	844,812	1,124,800
Mobile,	130,773	151,352						
Florida,	14,722	31,579						
Savannah,	129,351	184,572						
Charleston,	93,163	129,086						
Other Ports,	74,148	110,987						
Total American,	786,531	1,073,615	2,595	7,060	55,686	44,125	844,812	1,124,800
Brazil and Portugal,	113,121	137,317	3,884	190	....	....	117,005	137,507
Mediterranean,	35,859	28,315	2,001	990	3,333	419	41,193	29,724
East Indies,	74,761	62,767	56,165	34,220	14,248	10,233	145,174	107,220
Demerara, West Indies, &c.,	25,733	26,401	1,051	1,210	1,007	1,784	27,791	29,396
Total Packages,	1,036,005	1,328,415	65,696	43,670	74 274	56,561	1,175,975	1,428,646

Increase of Import in 1838,......252,671 Bales.

Statement of the Import, Export, and Consumption of Great Britain in 1838.

Stock in Ports, 1st Jan., 1838........	259,300	Export to the Continent and Ireland,....47,100 American, 3,600 Brazil and West India, 51,900 East India, 700 Egyptian,		103,300
Do. Dealers' and Spinners' hands, England,................90,000		Taken for consumption of England and Scotland from the Ports,	1,256,600	
Scotland, ...10,000	100,000	Deduct increase of Stock in hands of Dealers and Spinners,	50,000	
Import in 1838,......................	1,428,600	Consumed in England, 1,096,900, or 21,075 bags ℘ wk. Do. Scotland, 110,700, or 2,129 bags ℘ wk.		1,206,600
		Destroyed by Fire,		7,000
		Remaining on hand in the Ports, 1st January, 1839,....		321,000
		In Dealers' and Spinners' hands,....England, ...	138,000	
		Ditto, ditto, ...Scotland,........	12,000	150,000
	1,787,900			1,787,900

The average Weekly Consumption of Great Britain, in 1838, was estimated at 23,204 bags, consisting of 5,506 Upland, 11,742 Orleans and Alabama, and 317 Sea Island; Total, 17,564 American, 2,460 Brazil, 781 Egyptian, &c., 1,760 East India, 639 West India, &c., being an increase on the Consumption of 1837 of 2,871 Bags ℘ Week.

Cotton Yarn and Manufactured Cotton Goods Exported from England in the first Six Months of the Year 1839.

	Cotton Yarn.	Cotton Thread.	Calicoes Plain.	Calicoes, Printed and Dyed.	Cambrics and Muslins.	Cords, Velveteens, Velvets, and Jeans.	Cotton and Linen Mixed.	Counterpanes and Quilts.	Damasks and Diapers.	Dimities.	Ginghams and Checks.	Hosiery.	Imitation Shawls.	Lace, &c.	Lawns and Lenos.	Nankeens	Quiltings and Ribs,	Shawls and Handkerchiefs.	Tapes, Bobbins, &c.	Ticks, Checked and Striped.	Unenumerated Cotton Goods.
	lbs.	*lbs.*	*yds.*	*yds.*	*yds.*	*yds.*	*yds.*	*No.*	*yds.*	*yds.*	*yds.*	*doz.*	*yds.*	*yds.*	*yds.*	*yds.*	*yds.*	*yds.*	*doz.*	*yds.*	*£*
To Barbary and Morocco	..	..	183,840	3,042	..	..	..	288	..	..	22	..	..	..	..	..	..	20	..	..	..
" Brazil, and other parts of South America	7,949	152,654	23,782,331	24,544,587	174,312	102,586	418,155	16,909	..	..	17,736	54,308	..	452,183	11,880	13,234	2,191	99,170	1,029	..	7,641
" British West Indies	4,900	34,502	7,217,427	8,193,576	347,696	10,081	388,337	2,654	5,711	8,181	21,518	39,535	..	303,836	1,428	2,989	2,485	20,256	31,940	5,809	5,878
" British North American Colonies	262,240	32,516	6,280,468	7,236,231	102,258	67,936	3,611	10,790	2,000	1,461	3,918	17,912	..	548,299	..	1,518	700	4,936	2,306	1,390	6,227
" Belgium	17,796	20,654	319,474	1,224,969	13,755	16,799	1,572	12	30	902	160	1,3[illegible]3	..	6,925,912	..	..	18,254	1,967	..	..	406
" Coast of Africa, exclusive of Cape	3,234	5,892	1,099,621	2,174,088	44,046	7,709	..	571	1,413	..	678,418	494	..	726	..	8,358	1,530	31,300	530	908	98
" Chili and Peru	400	127,284	11,400,488	9,221,517	47,249	..	4,300	300	..	..	..	19,687	..	172,626	..	..	..	47,897	..	..	964
" Cape of Good Hope	6,192	2,526	1,140,525	1,205,403	45,522	52,249	2,028	3,838	1,073	6,023	16,433	6,055	..	5,190	10,000	2,892	1,364	11,988	1,160	27,856	1,966
" Colombia	500	9,680	578 002	1,001.789	3,240	17,300	18,170	100	..	..	..	1,641	..	..	..	..	..	4,103	..	..	38
" Denmark	7.130	..	30,460	10,107	1,978	..	..	1,770	..	..	..	..	..	47,378	..	..	..	166	..	..	10
" Egypt	10,000	..	545,438	308,490	1,944	..	..	..	..	..	..	..	..	..	..	..	97	..	..	..	..
" France	37,785	41,742	229,168	973,031	15,353	10,857	8,372	13	..	1,215	..	780	..	5,227,222	..	1,900	4,704	1,222	..	76	566
" Foreign West Indies	1,180	26,096	3,390,007	6,431,091	28,420	7,200	49,428	2,072	..	..	..	6,574	..	292,054	..	..	..	10,591	..	2,090	414
" Gibraltar	8,486	19,815	6,137,230	4,536,607	29,116	16,945	118,929	40	164	6,179	330	3,585	..	63,960	746	2,080	3,848	2,100	1,126	..	1,832
" Hanse-Towns, Mecklenburg, Oldenburg, &c.	18,382,159	23,021	4,799,626	10,504,286	206,790	1,164,569	..	..	..	..	152,597	342	..	20,064,437	..	..	26,045	10,078	24	..	1,611
" Hanover	106,409	..	10,470	34,036	2,840	1,080	..	..	..	..	3 601	..	..	..	..	..	..	586	..	..	..
" Holland	7,559,945	45,176	7,189.835	6,520,599	139,373	107,339	500	284	6,000	18,809	31,752	2,262	..	6,027,989	..	..	2,934	9,231	..	..	1,114
" India and China	4,802,850	18,269	37,340,770	7,607,992	774 646	40,128	34,692	300	498	..	71,610	3,983	..	97,806	12,000	..	5,158	13,426	300	4,180	3 882
" Malta and Ionian Isles	89,296	4,093	788,653	556,638	34,300	6,363	1,300	117	..	1,080	923	563	..	19,820	..	8,762	87	527	632	..	68
" Mauritius and Batavia	..	927	433,642	467,871	46,862	1,262	..	10	..	..	..	2,793	..	20,342	1,630	..	..	1,310	300	..	292
" Mexico	..	..	1,111,334	1,043,100	23 444	16,240	813	..	..	..	17,280	1,212	..	..	..	..	36	2,349	..	..	120
" New Holland	1,786	1,060	1,324,186	1,516,577	184 386	55.049	16,344	11,047	1,215	5 387	15,930	18,961	..	231,681	..	1,829	4,829	5,496	5,512	51,110	3,227
" Naples and Sicily	1,353,530	33,686	1,096,866	2,061,855	8,080	50,060	..	2,750	..	..	..	37	..	34,984	..	..	..	3,441	..	..	110
" Prussia	..	..	120	340	180	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" Portugal, Madeira, Azores, and Cape Verd	340,260	87,486	5,756,831	7,073,856	109,382	78,573	17,307	12	..	219	11,228	5,263	..	267,992	2,170	2,869	8,846	11,323	1,978	10,973	1,606
" Russia	3,728,036	2,994	500,490	1,369	102,607	17,720	..	296	..	..	6,144	1,087	..	264,690	..	..	331	..	..	..	143
" Sweden and Norway	416,520	8,779	43,623	127,260	12,626	6,891	..	..	..	..	119	314	..	28,970	..	29	22	3,222	275	53	..
" Spain	5 820	1,096	126,108	156,686	27,836	12,496	1,680	12	..	..	16,226	317	..	144	..	14,000	418	3,150	486	1,061	122
" Sardinia, Tuscany, &c.	861,926	75,289	3,022,286	5,415,847	7,696	62,908	..	1,127	..	..	..	532	..	166,812	..	..	..	7,378	..	..	794
" Trieste, Venice, and Austrian Ports	868,080	10,798	1,807,209	1,781,196	5,180	3,038	236	870	..	..	..	370	..	118,000	..	..	..	8,853	..	..	50
" Turkey and Levant	1,186,684	30,413	13,547,473	11,628,543	221 877	8,889	7,575	16	..	..	9,948	..	17,673	780	..	700	419	4,943	..	..	377
" United States of America	61,310	480,408	6,902,300	14,302,090	240,940	229,374	7,480	22,770	..	..	496	114,029	..	4,534,214	..	..	6,923	3 ,373	5,100	680	48,086
Total in first six months, 1839	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3 172,340	1,100,981	[illegible]	18,104	[illegible]	[illegible]	[illegible]	17,673	46,101,014	[illegible]	61,180	[illegible]	[illegible]	[illegible]	106,171	87,108
Ditto ditto 1838	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,663	71,308	[illegible]	[illegible]	77,426	[illegible]	16,780	[illegible]	[illegible]	[illegible]	[illegible]	72,197	[illegible]
Increase	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15,441	..	[illegible]	[illegible]	..	[illegible]	[illegible]	..	..	..	[illegible]	33,974	17,378
Decrease	[illegible]	.	.	..	..	..	..		.	[illegible]	..	..	[illegible]	..		[illegible]	[illegible]	[illegible]	..	..	..

Cotton Wool Imported into Liverpool, London, and Glasgow, from 1st January to 28th June, 1838 and 1839.

BAGS.	DESCRIPTION.	1838.	1839.	INCREASE.	DECREASE.
AT LIVERPOOL	American	787,573	550,226	..	237,347
—	Brazil	74,410	67,144	..	7,266
—	Egyptian	20,159	15,679	..	4,480
—	East India	25,518	18,515	..	7,003
—	West India	1,385	1,720	335	..
AT LONDON	American	4,994	4,383	..	611
—	Brazil	186	2,433	2,247	..
—	Egyptian	578	537	..	41
—	East India	9,166	12,084	2,918	..
—	West India	453	837	384	..
AT GLASGOW	American	25,015	21,557	..	3,458
—	Brazil	..	..	..	..
—	Egyptian	320	410	90	..
—	East India	1,431	2,094	663	..
—	West India	1,257	594	..	663
		952,445	698,213	6,637	260,869
		698,213			6,637
	BAGS . .	254,232	. DECREASE IMPORTED .		254,232

RECAPITULATION. Cotton Wool Imported into Liverpool, London, and Glasgow, from 1st January to 28th June, 1838 and 1839.					NUMBER OF BAGS EXPORTED.	
DESCRIPTION.	1838.	1839.	INCREASE.	DECREASE.	1838.	1839.
	Bags.	Bags.	Bags.	Bags.	Bags.	Bags.
American	817,582	576,166	..	241,416	22,537	8,269
Brazil	74,596	69 577	..	5,019	1,900	3,584
Egyptian	21,057	16,626	..	4,431	..	..
East India	36,115	32,693	..	3,422	16,999	7,400
West India	3,095	3,151	56	..	..	..
	952,445	698,213	56	254,288	41,436	19,253
	698 213			56	19,253	
BAGS .	254,232	. DECREASE IMPORTED .		254,232	22,183	DECREASE.

	Bags.
Stock of Cotton in England and Scotland, 1st January, 1839	498.929
Imported from 1st January to 28th June	698,213
Total Number of Bags	1,197,142
Deduct Exported	19.253
Supply of Cotton up to 28th June	1,177,889
Consumption (26 weeks) estimated at 20,000 Bags	520,000
Stock of Cotton in Great Britain, equal to 32⅞ weeks, if only 20,000 Bags are consumed weekly during the year	657,889

Weekly Transactions in Cotton at Liverpool.

	No. of Bags Imported.	No. of Bags taken by the Trade.	No. of Bags taken by Exporters.	No. of Bags to Speculators.	Total Number Sold.	Weekly Price of Uplands.		No. of Bags Imported.	No. of Bags taken by the Trade.	No. of Bags taken by Exporters.	No. of Bags to Speculators.	Total Number Sold.	Weekly Price of Uplands.
						D. ⅌ ℔ D.							D. ⅌ ℔ D.
Jan. 4	..	4.590	..	16.000	20,590	7⅝ to 9	April 5	6,291	7,660	78	..	7,660	8 - 9¼
— 11	20.753	9,230	280	26,500	35,730	7¼ - 9	— 12	31,940	13,560	210	6,000	19.350	8½ - 9⅜
— 18	16,251	12,280	250	5,700	18,230	7¼ - 9⅝	— 19	39,609	9,804	216	750	20,770	8⅜ - 10
— 25	4,299	20,400	70	16,800	37.200	7 - 9	— 26	12,779	6,360	440	..	7,800	8½ - 9¼
Feb. 1	4,477	13.246	300	5,700	19.240	6¾ - 9½	May 3	13,828	8,670	210	..	8,880	8 - 9⅜
— 8	20.863	13,550	260	6,950	20,761	7½ - 9	— 10	17,190	8,390	200	100	8,690	8 - 9⅜
— 15	43,815	11,003	427	8,000	19,430	7⅜ - 9	— 17	23,693	7,6 5	345	..	7.960	7⅞ - 9
— 22	13,775	12,535	225	1,000	14,060	7½ - 9	— 24	25,145	9,190	250	..	9,440	7⅞ - 9
March 1	28,356	19.718	322	4,200	24,240	7¼ - 9	— 31	25,912	19,350	500	..	19,850	7⅞ - 10
— 8	577	48,315	85	40,500	88,900	7 - 9	June 7	14.682	20,880	1,650	500	23.030	7⅝ - 9¾
— 15	12,404	16,915	215	43 600	60,730	8 - 9⅜	— 14	114,280	20,880	400	300	21,500	7½ - 10
— 22	45,211	29.118	352	20,350	59.820	8 - 10	— 21	13,645	10,225	925	..	11.150	7¾ - 9½
— 29	13.138	13,548	382	4,500	18,430	8¼ - 10	— 28	91,915	10.640	150	..	10,790	7 - 9¾

Particulars of Sales of Cotton at Liverpool.

BAGS AND BALES.	*For the Week ending June 28th*, 1839.	Price ⅌ ℔. D. D.	BAGS AND BALES.	*Same period last Year.*	Price ⅌ ℔. D. D.
2,490	Uplands	7 to 9½	4,900	Uplands	5⅛ to 7⅞
3,360	Orleans	7⅛ - 9⅜	4,630	Orleans	5⅜ - 9
10	Ditto	10½ - 0		Ditto	0 - 0
40	Sea Islands	21½ - 30	140	Sea Islands	20 - 32
	Stained ditto	0 - 0	30	Stained ditto	7 - 10
430	Maranham	8½ - 9½	130	Maranham	7⅞ - 9¼
470	Bahia and Macaio	8½ - 9	229	Bahia and Macaio	8⅞ - 8⅞
1,210	Alabama, Mobile, and Tennessee	7⅛ - 9½	1,750	Alabama, Mobile, and Tennessee,	5⅜ - 7⅜
	Ditto	0 - 0	50	Ditto	8⅜ - 0
830	Egyptian	12⅛ - 15	400	Egyptian	9¾ - 12
	Peruvian	0 - 0	20	Peruvian	8⅜ - 9
30	Demerara, &c.	8 - 12		Demerara, &c.	0 - 0
180	Common West India	5½ - 5⅞		Common West India	0 - 0
70	Laguira	9½ - 0	30	Laguira	8½ - 0
940	Surat and Madras	4⅛ - 6⅜	1,020	Surat	4¼ - 5⅜
100	Bengal	4½ - 0	140	Madras	4¾ - 5¼
630	Pernambuco, Paraiba, &c.	9⅜ - 10½	50	Bengal	3 - 0
			610	Pernambuco, Paraiba, &c.	8¾ - 9½
10,790	Total.		14,120	Total.	

		BAGS.			BAGS.
Total Sales during the Week		10,790	Total Sales during the Week		14,120
On Speculation			On Speculation	300	
For Exportation		150	For Exportation	450	750
Total to the Trade		10,640	Total to the Trade		13,370

The Prices of Cotton in Britain and the United States since 1789; the Capital and Number of Persons employed in growing it; and the Value of the whole Crop.

Years.	Prices per lb.		Capital employed in connection with growing.			Persons employed in growing, and dependent.		Value of whole crop in	
	Britain.	United States.	U. States.	Egypt	Brazil	United States.	Elsewhere.	United States.	Elsewhere.
	Pence.	Cents.	Dols.	Dols.	Dols.			Dols.	Dols.
			Mills.	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.
1789	12 to 22	..							
1790	12 to 21	14½							
1791	13 to 20	26	3½	.	80	1/10	1	½	40½
1792	20 to 30	29							
1793	13 to 22	32							
1794	12 to 14	33							
1795	15 to 27	36½							
1796	12 to 24	36							
1797	12 to 37	34							
1798	22 to 43	39							
1799	17 to 60	44							
1800	16 to 36	28							
1801	17 to 38	44	60	..	30	1/10	⅔	8	30½
1802	12 to 35	19							
1803	8 to 15	19							
1804	10 to 18	20							
1805	14 to 17	23							
1806	12 to 15	22							
1807	10 to 14	21½							
1808	9 to 24	19							
1809	10 to 15	16							
1810	10 to 19	16							
1811	7 to 16	15½	124	1/10	36	¼	⅔	12½	37
1812	11 to 14	10½							
1813	16 to 28	12							
1814	25 over.	15							
1815	20 ..	21							
1816	18½ ..	29½							
1817	20 ..	26½							
1818	20 ..	34							
1819	13½ ..	24							
1820	11½ ..	17							
1821	9½ ..	16	300	3½	62	½	⅔	20½	37
1822	8½ ..	16½							
1823	8¼ ..	10 & 12							
1824	8½ ..	15							
1825	11½ ..	21							
1826	8½ ..	11							
1827	6½ ..	9							
1828	6½ ..	10½							
1829	5½ ..	10							
1830	6¼ ..	10							
1831	5 ..	9½	600	20	36	½	⅔	25	30½
1832	6 ..	10							
1833	7 ..	11						70	30½
1834	9½ ..	12			..	..			
1835	10½ ..	16½	800	21	36	½	⅔ to 1		

The prices given as to the United States are those at the places of exportation and the average during the year [illegible]

Quantity of Cotton manufactured and used in several Countries.

Quantity manufactured and consumed.										
Years.	England.	France.	United States.	China & India.	South America and Mexico including Brazil.	Germany.	Turkey and Africa.	Spain.	Prussia.	Elsewhere.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.	Mills.
1780	13½	13½	13½							
1784	11¼									
1789										
1790	30	..	5							
1791	28	10	5¼	285	30	15	3½	2	2	60
1792	34½									
1793	17½									
1794	23									
1795	25									
1796	31									
1797	22½									
1798	31	18								
1799	42	10½								
1800	51	6½	8[1/10]							
1801	53½	11	9	230	45	22	30	3	5	50
1802	56	15 1/10								
1803	51½	15½	..	..	..	..	..	3		
1804	66½	17½								
1805	58½	18	11 [⅓]							
1806	57½	21½								
1807	72½									
1808	41									
1809	87½									
1810	136	25	16[2.]							
1811	89½	22	17	270	63	25	45	5	6	50
1812	90½	21								
1813										
1814	92½									
1815	92	..	21,							
1816	86									
1817	116½	20 or 26								
1818	172									
1819	132½									
1820	142	40								
1821	114	47	50	300	42	30	45	8	7	45
1822	130½	61								
1823	177	50								
1824	131	75	..	..	..	..	..	..	7 7/10	
1825	205	67								
1826	190½	96								
1827	250½	67								
1828	220½	61	60							
1829	190½	71								
1830	230	67½								
1831	267	63½	77½							
1832	264	74								
1833	270½	67	70 to 80	315	30	30	60	10	20	40
1834	277	80								
1835	300½	..	100							

This Table shows not the consumption of manufactured cotton, but the consumption and operations of cotton from the raw state. It includes the quantity of raw cotton raised in any country and not exported, with the additional quantity imported and not re-exported.

Number of Persons and of Spindles employed in Cotton Manufactures, at different periods, in several Countries.

	Persons employed connected with factories, chiefly, number of			Spindles employed in factories, number of			
Years.	In England.	U. States.	France.	In England.	U. States.	France.	Switzerland.
1750	20,000?						
1760	16,000?						
1770	30,000?						
1784	80,000?						
1787	162,000 to 350,000?						
1789	.	.	.	49,300			
1790	.	.	.	.	70		
1791							
1792							
1793							
1794							
1795							
1796							
1797							
1798							
1799							
1800							
1801							
1802							
1803							
1804							
1805	.	.	.	.	4,500		
1806	.	.	120,000	.	.	81,000	
1807	.	.	.	.	8,000		
1808							
1809	800,000?	.	.	.	31,000		
1810	.	.	.	.	87,000		
1811	.	.	.	Millions. 5	80,000		
1812	.	.	.	4,?	.	Millions. 1	
1813							
1814	.	.	.	.	132,616		
1815		100,000	.	.	130,000		
1816		.	.	6			
1817	.	.	.	6			
1818	.	.	.	.	.	1 3/10	
1819							
1820	.	.	.	.	220,000		
1821	.	.	.	.	220,000		
1822	427,000						
1823							
1824	.	.	.	6?	.	.	300,000
1825	.	.	.	?	800,000		
1826							
1827	708,100 to 1,000,000						
1828	.	.	.	.	Millions. 1¼ to 1		
1829	.	.	.	7			
1830	.	179,000 173,100	.	.	1½		
1831	.	200,000	500,000	7 to 8,			
1832	1,200,000	.	.	.	.	3½	
1833	1,500,000						
1834	.	.	800,000	9½			
1835	.		.	.	1½		

In some places in England, the change of late years from the hand to the power loom has caused some distress, and the employment of a larger proportion of females and children. About one fifth are employed [illegible] are men, one third women, and the rest children. The number of hand-looms in England, in 1830 and 1834, was about the same [illegible]

COVERDALE, MILES; bishop of Exeter in the time of Edward VI., and noted as the first who introduced to his countrymen a complete translation of the Bible, was born in Yorkshire in 1487. His early life corresponded little with his subsequent career; for he not only studied in a monastery at Cambridge, but became a monk of the order of St Augustine. It is probable, however, that under Dr Barnes, his prior, who afterwards suffered martyrdom for the Protestant faith, Coverdale acquired a large portion of that scriptural learning which, at the proper time, he brought to bear with full effect on the great question of the Reformation. In 1514, he was ordained at Norwich; and the university of Tubingen, in Suabia, having conferred upon him the degree of doctor of divinity, he, with some other divines of Cambridge, avowed his departure from the Romish church, and his conversion to Protestantism. This important step appears to have been taken about the year 1530, when there was a strong effort made, especially at the two universities, to restore the church of England to its original purity.

In Germany he met with William Tindal, who had led the way among the English translators of the scriptures,—having translated from the original Greek, and published the New Testament in 1526. With Coverdale's assistance he also translated and edited the five books of Moses. Tindal, whose life, however useful to others, seems to have been one of "labour and sorrow," was imprisoned through the influence of King Henry VIII., and by virtue of a decree made in the assembly at Augsburg, brought to execution in 1536.

The joint exertions of these two excellent men having been thus interrupted by the violent death of one of them, Coverdale followed up, with increased energy, the object, in the pursuit of which his friend had fallen a sacrifice. He set himself to the great work of publishing *the whole of the sacred canon in English*, and declaring himself as ready to serve the interests of religion "in one translation as in another," the one which he presented to his countrymen, was, according to his own title, made from the Latin and German. Coverdale, however, called his version a "special" translation, because it was different from the former English translation. "Its noble simplicity, perspicuity, and purity of style," says the Rev. Thomas Hartwell Horne, "are truly astonishing. It is divided into six tomes or parts, adorned with wood-cuts, and furnished with scripture references in the margin. The last page has these words,—"Prynted in the year of our Lorde M.D.XXXV., and fynished the fourth daye of October." It is in folio, and, from the appearance of the types, is generally considered to have been printed at Zürich, in the printing-office of Christopher Froschover. The following is the title-page of this extremely rare and curious volume:—

> 'Biblia. The Bible, that is, the holy Scripture of the Olde and New Testament, faithfully and truly translated out of the Douche and Latyn into Englische, M.D.XXXV.'"

Of this Bible there was another edition in large 4to., 1550, which was republished, with a new title, 1553; and these, according to Lewis, were all the editions of it which were ever put forth.

Coverdale, during the unsettled state of religion in England, spent much of his time in labours abroad; and we find him in 1538, involved in a troublesome affair connected with the object which was so dear to his heart. Grafton, the famous printer, had been allowed by Francis I., king of France, at the request of our Henry, to print a Bible at Paris, on account of the superior skill of the workmen there, and the goodness and cheapness of the paper. But, notwithstanding the royal license, the church of Rome interfered. The inquisitors issued their order, and the French printers, their English employers, and the corrector of the press, who was Miles Coverdale himself, were summoned before the inquisition. They condemned the whole impression of 2500 copies of the Bible to the flames. Some copies were, however, secretly sold to a haberdasher to wrap his goods in, and were thus saved from the general destruction. Not only were these copies, but the presses and types, as well as the printers, afterwards brought to London; a most valuable importation, which enabled Grafton and Whitchurch to print, in 1539 and 1540, under Coverdale's direction, what is called "Cranmer's," or "the Great Bible." Of Cranmer's Bible we have a specimen in that translation of the Psalms of David which is adopted in the common prayer-books.

In 1551, king Edward VI. made Coverdale bishop of Exeter. On this office he entered very poor. In his diocese he endeavoured to promote religion by frequently preaching in the churches at Exeter; and he became eminent for his hospitality, which he exercised to the extent of his means; for his constant kindness to the poor; and, more than all, for his unaffected humility of deportment and character. On the accession of queen Mary, he was driven from his see, and thrown into prison: his life, however, was spared, owing to his connection by marriage with the chaplain of the king of Denmark, who interceded for him; but, after two years' confinement, he was, by way of special favour, allowed to go into exile. At Geneva, whither he retired, he united with some other English refugees in producing, in 1560, the "Geneva Bible," the notes to which savour of the opinions of Calvin; and when recalled to England in the happier days of Elizabeth, Coverdale was found, in his utter departure from popery, to have adopted views approved by the German reformers, but not sanctioned by the church of England; which prevented him from resuming his episcopal functions, and, indeed, for some time, from engaging in any ministerial duty. At length, Dr Grindal, bishop of London, gave him the living of St Magnus the martyr, near London bridge, the first-fruits of which, however, he was too poor to be enabled to pay. Indeed, from the time of his ejection from the see of Exeter, his life was a continual struggle against poverty. The queen excused him the payment of the first-fruits; but, notwithstanding, he soon gave up his living, though he continued to officiate in the church. He died in February, 1568, aged eighty-one, and was buried in the church of St Bartholomew, by the royal exchange, as appears by the register.

COW-TREE; a remarkable tree in South America, from which a substance similar to milk is procured. Although mentioned by older writers, it was first properly described by Humboldt and Bonpland. It is supposed by Humboldt to be peculiar to the Cordillera of the coast of Venezuela particularly from Barbula to the lake of Maracaybo, but it would appear to be much more extensively distributed through South America, at least three trees possessing very nearly similar properties, and known to the inhabitants by the names of lyria, popa, and sandè, exist in the vast forests of Choco and Popayan. In the valley of Caucagua, it is known by the name of *arbol de leche*, or the milk-tree; and there the inhabitants, as Humboldt acquaints us, "profess to recognize, from the thickness and colour of the foliage, the trunks that yield the most juice,—as the herdsman distinguishes, from external signs, a good milch cow." At the farm of Barbula, this vegetable fountain is more aptly termed the *palo de vaca*, or cow-tree. It rises, as Humboldt informs us, like the broad-leaved star-apple (*chrysophyllum cainito*), to a height of from thirty to forty feet, and is furnished with round branches, which, while young, are angular, and clothed with a fine heavy down. The leaves are alternate, petiolate, oblong, rounded at either extremity, and terminated with a very short point, or acumen,—very entire at their edges,—their veins reticulated, and the primary ones projecting on the surface;—they are tough or leathery, very smooth, nine or ten inches in length, and hardly four in breadth: the petioles, or footstalks of the leaves, are thick, furrowed, smooth, eight or nine inches long, and unfurnished with stipules at their base. The flowers, unfortunately, have never yet been seen by any botanist, and hence nothing is known with certainty as to the genus to which it belongs: the fruit resembles the drupe of a walnut, is fleshy, globular, and green, containing one or two one-seeded nuts. The trunk, on being wounded, yields its bland, agreeable, and nutritious fluid in the greatest profusion, especially at the rising of the sun. "It is not here," says Humboldt, "the solemn shades of forests,—the majestic course of rivers,—the mountains wrapped in eternal frost,—that excite our emotion. A few drops of vegetable juice recall to our minds all the powerfulness and the fecundity of nature. On the barren flank of a rock grows a tree with coriaceous and dry leaves. Its large woody roots can scarcely penetrate into the stone. For several months of the year, not a single shower moistens its foliage. Its branches appear dead and dried; but when the trunk is pierced, there flows from it a sweet and nourishing milk. It is at the rising of the sun that this vegetable fountain is most abundant. The blacks and natives are then seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow, and thickens at its surface. Some employ their bowls under the tree itself, others carry the juice home to their children. We drank considerable quantities of it in the evening before we went to bed, and very early in the morning, without feeling the least injurious effect. The ropiness of this milk alone renders it a little disagreeable. The negroes and the free people, who work in the plantations, drink it, dipping into it their bread of maize or cassava. The *major domo* of the farm told us, that the negroes grow sensibly fatter during the season when the *palo de vaca* furnishes them with most milk."

This juice, exposed to the air, presents at its surface, perhaps in consequence of the absorption of the atmospheric oxygen, membranes of a strongly animalized substance, yellowish, stringy, and resembling a cheesy substance; these membranes, separated from the rest of the more aqueous liquid, are elastic, almost like *caoutchouc;* but they undergo, in time, the same phenomena of putrefaction as gelatine. The people call the coagulum that separates by the contact of the air, cheese; this coagulum grows sour in the space of five or six days.

CRAIGMILLAR CASTLE; a castle situated about three miles south of Edinburgh, the ruins of which still remain. It stands on elevated ground, and commands an extensive and beautiful prospect on every side. Its age is not known; but the rampart, as appears by the inscription upon the gate, was built in 1427.

The front of the building is towards the north: over one of the doors is carved a press and a cask, in allusion, it is believed, to the name of *Preston*. It was surrounded by a thick rampart, thirty feet high, with parapets and turrets, of which a considerable part remains. There is an inner court of considerable extent; and there is also a very large outer court; on the west side of which there was erected a presbyterian meeting-house, in consequence of the indulgence granted to that persuasion by James VII. of Scotland.

This castle was for some time the residence of James V., when he left Edinburgh on account of the plague. It was taken, and part of it demolished, by the English, in 1543, when Henry VIII. invaded Scotland, in order to compel the young queen of Scots to marry his son prince Edward. Mary queen of Scots resided here for some time after her return from France, in 1561. Her French servants took up their abode in a neighbouring village, which is yet known by the name of Little France; and a room in the castle is still called queen *Mary's drawing-room.*

The castle and surrounding estate belonged, as far back as the year 1374, to the family of Preston. They now belong to the descendants of Sir Thomas Gilmour, the great Scottish lawyer, who acquired the property about the time of the Revolution.

CREOSOTE; a remarkable substance, discovered about 1831, by Reichenbach, in the oil of tar. It is obtained by a tedious process, principally consisting in repeated solution in potash, separation by acid, and distillation. It is an oily fluid, sp. gr. 1·037; colourless, refracting light powerfully, having a sweetish burning taste, and a strong smell of peat smoke, or smoked meat. It has many useful properties. 1. Flesh steeped in a solution of it, one part to a hundred of water, for twenty-four or forty-eight hours, is rendered imputrescible, and acquires a pleasant smoked flavour. This explains the use of smoke, tar, and pyroligneous acid as antiseptics; for all these bodies owe their virtue to the creosote they contain. As the Egyptians are known to have used the oil of tar in embalming, Reichenbach concludes, with much probability, that creosote is the essential mummifying substance; and that the fragrant gums were only used to disguise the smell. From this powerful antiseptic property is derived the name, which signifies "preserver of flesh." Creosote is now beginning to be employed as the best means of smoking flesh and fish. 2. Creosote has been used in surgery and medicine with great success. It is an excellent application to ulcers, even the most malignant, to most cutaneous eruptions, and to burns and wounds. It should be applied as a substance at first, till a healthy action is produced, after which it may be used diluted. It produces intense but very short-lived smarting. It also acts as a very energetic and safe styptic. Internally, it has been found of use in stomachic disorders, especially in obstinate vomiting. The dose should be carefully regulated; one to two drops in a cup of water being an averge dose. A larger quantity might produce poisonous effects. To the [illegible] ous affections of horses, dogs, and sheep, it has been successfully applied in the form of ointment; and it is by far the most effectual cure yet discovered for the toothache arising from caries. When carefully applied, in substance, to the hollow, taking care not to swallow it, it rarely fails in giving instantaneous relief. It is the active ingredient in several recent nostrums, as is proved by the smell. 3. It has been used in the construction of hollow lenses for telescopes by professor Marx of Brunswick, from its high dispersive power. On the whole, no substance has been lately produced, which seems likely to be available for so many useful purposes. Dr Cormack has published a small volume on creosote, which may be consulted for details.

CROWLAND. See *Croyland.*

CROYDON, a market-town in the county of Surrey, nine and a half miles south from London. It enjoys a considerable trade, particularly in corn. The manor of Croydon appears to have been attached to the archbishopric of Canterbury at a very early period. The palace, or manor-house, was long the occasional abode of the archbishops, particularly during the reign of queen Elizabeth, who seems to have delighted to visit this place. The queen held a council here on the 30th of April, 1567; during which year she twice visited archbishop Parker, who then held the see, and was eminently distinguished for his virtues and his learning. In July, 1573, the queen and her whole court remained here seven days; passing the time with "jousts" and rejoicings. After the accession of archbishop Whitgift to the see, he was frequently honoured with visits from his sovereign, the last of which that we can find recorded was in 1600. When James I., king of Scotland, was a prisoner in England, he was placed at this palace, under the custody of archbishop Arundel. Having fallen into decay, the palace was, in 1780, sold for £2520, and fitted up as a calico-printing establishment, while Addington Park, about three miles distant, was purchased for £25,000, as a more suitable residence for the archbishop.

The parish of Croydon is one of the most extensive in the kingdom, being thirty-six miles in circumference, and comprising within its limits more than 10,000 acres and eight hamlets. Population in 1831, 12,447.

CROYLAND, OR **CROWLAND**; an ancient town in Lincolnshire, fifty-one miles S. S. E. from Lincoln, situated on the rivers Welland and Nene, and a large drain called Cat water, over which there is a singular old bridge. This is supposed to have been built about the year 860; it consists of three semi-pointed arches, meeting together in the centre, the abutments standing on the angles of an equilateral triangle. It is placed at the junction of three roads, which thus terminate at the crown of the bridge. The steep ascents are made into steps, paved with small stones set edgewise; at the foot of one segment there is the ruined statue of some Saxon monarch, by some supposed to be Ethelbert.

In olden times there was nothing but impassable marshes around the town. These have now been drained and converted into luxuriant meadows and corn fields. In this process wind-mills have been successfuly employed, some of them lifting forty tons of water per minute. Farming and grazing occupy the greater part of the inhabitants. They have also an extensive trade in poultry and especially in wild-ducks, which are taken in nets to the number of thousands at a time. For the privilege of fowling and fishing in these ponds, the abbot of Crowland claimed £300 per annum from the inhabitants, which is still exacted by the crown. The market has long ago been transferred to Thorney in the county of Cambridge; but the fair—commencing on the festival of St Bartholomew—is held annually and continues for twelve days. Population of Croyland in 1831, 2268.

The *abbey of Croyland,* the ruins of which still remain, was founded by Ethelbald, king of Mercia, about the year 817, in honour of one of his nobles, who, from his religious devotion, was called St Guthlac. Ethelbald contributed £300 in silver to its erection and granted it a £100 a year, for ten years, besides the permission to its residents of constructing a town in its neighbourhood for their use. For several succeeding reigns it enjoyed the favour of the ruling monarch, particularly of Egbert and Withlaff. And thus did it continue to prosper. till the arrival of the ruthless Danes, who, on visiting the county of Lincoln, attacked this famous abbey, destroyed it, and barbarously murdered its inmates. This happened about a hundred and fifty years after its foundation, and it remained thus in ruins and despoiled, till the reign of king Edred, in 948, when that monarch rebuilt it; however, in 1091, it was again destroyed by fire, and in 1112 it was again rebuilt; and, further, scarcely thirty years had elapsed, before it met with a similar fate, and was burnt to the ground; but in 1170 it rose from its ashes, and met with no particular violence or injury for nearly 400 years, when Croyland Abbey, with the monastic institutions in general, fell a sacrifice to the avarice and the vengeance of Henry VIII.

CULLUM, SIR JOHN, sixth baronet, the historian of Hawsted in Suffolk, was born on the 20th June, 1733. Having commenced his studies in the grammar school of St Edmundsbury, he entered the university of Cambridge, where he took the degrees of bachelor and master of arts, and obtained the bachelor's prize for the best dissertation in Latin prose. He was admitted a fellow of Catherine hall on the 7th Dec. 1759; was instituted in 1762 to the rectory of Hawsted, on the presentation of his father, and in Dec. 1774 to the living of Great Thurlow, on the presentation of his brother-in-law, Henry Vernon, Esq. He was a fellow of the royal society and of the society of antiquaries. He died on the 9th Oct. 1785, in the fifty-second year of his age.

The history of Hawstead was published originally in the *Bibliotheca Topographica Britannica;* and a second edition, in a separate form, made its appearance in 1813, with corrections by the author, and notes by his brother, Sir Thomas Gery Cullum. In a postscript by John Nichols, F.S.A. to the advertisement prefixed to this second edition, is a brief memoir of the deceased, with an account of his chief literary communications.

Sir Thomas Gery Cullum, his successor, partook of the literary character of his brother, and was a Fellow of the royal and Linnæan societies, and of the society of antiquaries. Natural history was the chief object of his studies, and botany his favourite pursuit, in which he found an ardent associate in his friend the late president of the Linnæan society, Sir James Edward Smith, who dedicated to him his "English Flora." Sir Thomas Cullum was born 30th Nov. 1741, and was entered of the Charterhouse school in 1752. He became a pupil of the celebrated surgeons, William and John Hunter; was admitted a member of the late corporation of surgeons on the 7th May, 1778, and, by acceptance of the charter of 1800, was enrolled a member of the college. He was a capital burgess of St Edmund's Bury, and deputy lieutenant for the county of Suffolk; and held the office of Bath king of arms from the year 1771 to 1800, when he resigned it in favour of his second son, John Palmer Cullum, whom he survived. Dying on the 8th Sept. 1831, Sir Thomas Cullum lies buried with his ancestors in Hawsted church.

CURFEW; the word *Curfew* is derived from the Norman word, *carrefou*, or *couvrefeu*, and is now considered by us to mean the signal for extinguishing fires. Pasquier says it is derived from *carfou*, or *garefou*, as being intended to advertise the people to secure themselves from the robbers and revellers of the night. One of the laws of William the Conqueror ordered all his subjects to extinguish their fires and light, and retire to rest, at eight o'clock, at which hour the Curfew was appointed to be rung, but the regulation existed in the monasteries long before his time; and although it was not, perhaps, obligatory on the inhabitants of the adjoining villages, yet was highly conducive to the general safety, when the cottages were composed entirely of timber. Henry, in his *History of Great Britain*, says there is sufficient evidence that the same custom prevailed in most parts of Europe at this period, and was intended as a precaution against fires, which were then very frequent and very fatal, when so many houses were built of wood; and Peshall, in his *History of the City of Oxford*, affirms that the custom of ringing the bell at Carfax, every night at eight o'clock (called the Curfew bell, or cover-fire bell), was by order of *king Alfred*, the restorer of our university, who ordained that all the inhabitants of Oxford should, at the ringing of that bell, cover up their fires and go to bed; which custom is observed to this day: and the bell as constantly rings at eight as Great Tom tolls at nine.

The custom of ringing the eight o'clock, or Curfew, bell, is still kept up, or was till lately, in many towns in England, though the obligation it was intended to enforce, viz., the extinguishing the fires, &c., and the pains and penalties consequent upon the transgression of the law, were abolished in the year 1110, by Henry I.

The obligation to extinguish fires and lights at a certain hour was imposed upon his subjects by David I., king of Scotland, in his *Leges Burgorum*.

CURLING; a game played with stones upon the ice, at one time peculiar to Scotland, but now practised in some districts of England and North America. It is somewhat similar in its principles to the game of bowls upon a green.

Two parties, each perhaps composed of about a dozen persons, play against each other. Each person is provided with a flattish round granite stone, resembling a small cheese in figure, polished on the bottom, and having a handle stuck into the upper side. The stones are hurled along from one end to the other of a long cleared space of smooth ice, called a *rink*. Skill in playing not only depends in hurling the stone truly to the goal at either end, but in dislodging the stones of the antagonist party. As one of each side plays alternately, the game is full of vicissitudes; for half a dozen of the best-laid *shots* may be in an instant scattered over the field of ice by the concussion of a single stone which has been sent on its errand with a well directed arm.

In frosty weather, throughout the south and west of Scotland, but little, if at all, in the north, the game of curling is eagerly followed by all classes of the people, from the highest dignitary of the land to the humblest artizan. Parish contends against parish, county against county, club against club, in universal mirthful rivalry. Ordinary matches are called *spiels*: matches betwixt neighbouring parishes or towns are called *bonspiels*, and a not uncommon stake is a load or two of [illegible] to the poor of the parish that gains the victory. A more usual stake, at least in smaller contests, is a dinner, appropriate to the season, of boiled salt beef and greens, given by the losers to the winners. So keenly is the game pursued, that, in many places where there are no natural brooks, artificial ponds are formed at the approach of winter, for the purpose of being frozen.* At Edinburgh, where there are neither rivers nor ponds, the inhabitants resort for the amusement of curling, as well as skating, to the adjacent beautiful small lake at Duddingstone, lying at the south-eastern base of Arthur's seat. Here a most animated scene is exhibited during the period that the waters of the lake are frozen. Numbers of rinks are cleared, at which may be seen playing together persons of almost every shade of society—professors of the university, clergymen, private gentlemen, merchants, tradesmen, and artizans—all meeting on a common level, and engaged in the same spirit-stirring pursuit.

Curling is of unknown antiquity in Scotland. When the general assembly at Glasgow in 1638 deposed the episcopal church government, one of the charges brought against the bishop of Orkney was that he had played at this game on the sabbath day. The charge, whether true or false, proves that curling was known in the country at least two hundred years ago, however earlier.

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* The merit of first forming artificial curling rinks belongs to Mr John Carnie of Largs, who more than ten years ago succeeded in making a rink at Largs weeks before the ice would bear in any other quarter. In forming an artificial curling rink, the first thing to be done is to select a suitable piece of ground, levelling and freeing it from grass and weeds; the bottom must then be lined with clay, to prevent any undue absorption of water. A little lime mixed with the clay has the effect of killing and checking the mining operations of worms; and in the absence of lime, a small quantity of sea-water spread on the surface will serve the very same purpose. The walls, so to speak, of the rink, and which need not be above five inches in height, are formed in the same manner as the bottom with this exception, that the clay is sloped and covered with a thick layer of turf, to prevent the sides and ends from being broken. The rink may be from forty to sixty yards long by seven yards broad. Little more than a hundred carts of clay completed the pond formed at Largs, and this was the principal item of expense. To produce ice to the thickness of a quarter of an inch, on such an area as is described above, about six hundred gallons of water will suffice; but where less is required, the fourth part of the quantity will be found sufficient, and may be applied by two men in the course of an hour who sprinkle the surface with the roses of watering pans. The water freezes as fast as it falls, and many coatings of ice will be formed before the men have completed their task, and within the time just specified.

After two years' experience, Mr Carnie found an objection arising from weeds and worms; and to obviate this, he employed workmen to stick a number of small stones into the clay; over these a roller was drawn repeatedly, and the mass, when thus consolidated, became nearly as firm and hard as a road thoroughly macadamised. Not contented with this, he spread a mixture of lime and sand over the clay to the depth of an inch and a half or more, levelling the surface with the roller as before; and if a barrel or two of Roman cement were superadded, or even used as a substitute for the sand, the inventor is of opinion that the pond would remain perfect for many years without requiring the slightest repair. But for ordinary purposes, a mass of well-levelled clay, sprinkled with lime, with sides and ends a few inches high is quite sufficient; and though it may suffer from worms and the vicissitudes of weather, a very little care will put every thing to rights on the recurrence of winter.

"The time is not distant," says Mr M'Diarmid, in his Sketches of Nature, "when the game of curling was little known out of Scotland, or even within it, benorth the Forth. But the taste for this manly sport has increased greatly of late years; and in various parts of England, as well as of America, the broom and the channel-stone are put in requisition with the same regularity that winter comes round. In the course of last year, several hundred pairs of stones were exported to Canada; and it may be worthy of remark, that the best material for the manufacture of these is found at Ailsa Craig—one of the most remarkable rocks in the world—and particularly on the side of it facing Girvan. To fashion and balance the stones properly requires a very good workman, and the few that are known to excel in the art have great reason to be satisfied with their earnings.

"In the whole range of rural sports," continues the same writer, "I know nothing more exhilarating than a *spiel* on the ice, where the players are numerous and well matched—the stakes a dinner of beef and greens—and the forfeit the honour of rival parishes. Whether we mingle with the eager throng, or perambulate the banks of the frozen lake, on the principle that 'distance lends enchantment to the view,' the scene abounds with points of interest, that might well afford scope for the pencil of a Wilkie, or the pen of a Scott. First, we have the icy arena itself, scooped at the bottom of some quiet vale, fringed with reeds, from which the wild duck rises whirring on the wing, and skirted with alders, whose beautifully feathered and fantastic tops seem even more engaging than when nursed into foliage by the beams of May. All around is blank and dreary—the snow-flake freezes as fast as it falls—the sun seems level with the horizon's verge—the hills make the spectator cold to look at them—and every thing, in one word, conspires to complete the picture of a winter's day. But the courage of men bent on the favourite amusement of curling is not easily damped by the inclemency of the elements; on the contrary, their spirits seem to mount as the thermometer falls, and nothing pleases them more than a feeding storm, and, along with that, the prospect of a long lease of "their roaring play." Arrived at the scene of action, all is bustle and animation, till the stones have been distributed, assorted, claimed—rinks measured, tramps fastened, tees fixed and the order of battle completely arranged; and as these preliminaries are speedily settled, to it the parties set with all the anxiety of those who contend for a much higher prize. Lots, perhaps, are cast for the first shot, and the greatest novice invited to deliver the first stone; and should his arm lack the proper pith, that instant a dozen of brooms are raised to help the laggard over the *hogg score*. A second, a third, a fourth succeeds, and so on, till the line stretches a tolerable length, though not by any means to the 'crack of doom;' and each man is warned by his respective friends to plant, if possible, an excellent guard—dislodge this stone and cover that—open up one port and close up another—play soft or strong, outside or inside, as the occasion may require—and steer as closely by the signal broom, as the mariner, when warned by similar devices, threads his watery way through sandbanks and shallows."

As curling is one of the most healthy and exhilarating of sports, and as it can never be followed to any injurious extent, seeing that its practice is necessarily limited to a season of the year when country labour is mostly suspended, we shall here lay before the reader an elaborate description of the manner in which the game is performed. The knowledge of a pastime so admirably fitted for warming and enlivening the dreary hours of a winter day deserve to be extensively spread. For the description which we here quote we are indebted to the "Penny Magazine."

"The first business is to select a portion of ice as pure, level, and hard as possible: this ought not to be less than forty-six yards in length and six in breadth, but fifty-two long by eight broad is preferable. This is termed a *rink* or *lade*. Along the middle, and about equally distant from each end, two points are selected, called the *tee:* the distance between these is usually from thirty-six to forty-two yards, but is determined by the quality of ice, average strength of the players, and excellence of the stones used; there ought however to be about five yards between each tee and the extremity of the rink. One or two circles, called *rings*, of different diameters, are commonly described round each tee, to facilitate the measuring the distance of the stone from the centre, and during the game to assist the eye in forming a more correct idea of what stone is nearest it, as actual measuring is not allowed till every stone has been played from the opposite end. Upon the tee a small conspicuous but easily moved mark, as a cone of wood two or three inches high, is usually placed; and this indeed is the real *tee*, the immovable centre or point below it being the tosee: sometimes instead of a mark, a player places the end of his broom over the tosee, and removes it the moment the stone is delivered. About one-fifth of the whole distance between the tees, and between them, a line called the hog-score or collier-score is drawn across the rink at each end. Each player is provided with a broom, with which to sweep the rink clear, and two curling stones; these last vary in size and weight, according to the strength of the player, some weighing as much as fifty lbs. imperial, or even more, others only twenty-eight or thirty lbs.; they are of the hardest and toughest granite or whinstone; they are always made circular, with a flattish sole, or under part, which is highly polished; the sides are either straight, when the stone is the section of a cylinder, or circular, when it may be compared to a very flat barrel; the usual height of a barrelled stone is about one-half of the greatest diameter, and the top or sole about 2½ or 3 inches less than the greatest diameter. About 10 inches in diameter, with a sole and top 7 or 7½, and height 5 or 5¼, yields a well shaped stone of from 35 to 40 lbs. These stones have an iron or wooden handle, either open at one end or closed, and fixed into the upper surface. The players, of whom from eight to sixteen can join in the game at the same rink, are now divided into two parties, each of which chooses a captain, called a *director* or *skipper*, who has the whole control of his side of the game, and may arrange his own players, including himself, in what order he pleases; the same routine is preserved throughout the whole game, and each party plays alternately.

"The directors, if not otherwise previously arranged, draw lots which party shall play first. The first player now stands at one of the tees, in such a position that the stone must pass over the tee;

various modes are adopted to give a secure footing, but the best is a plate of iron about 3½ or four feet long and nine or ten inches broad, punched or frosted on both sides, so that it not only yields secure footing to the player, but cannot move from its position; and moreover if it be properly placed at first, none of the players can stand in an improper position. The first player now delivers his stone by lifting it, and by a swing of his arm sliding it along the ice towards the farther tee: his object is merely to cross the *score* farthest off; if it goes farther, and approach the tee too closely, the opposite party's first stone may be immediately made to strike it to a great distance, and the stone be thus in a measure lost; on the other hand, if it does not cross the score, it is termed a *hog*, or *collier*, and is removed off the ice; and other players have to follow him on the same side till the ice be filled, that is, until the first party have one stone across the score, after which the adverse party plays. The evil of the first player's stone being a hog, or collier, is apparent at the conclusion of the *end*,* for then the opposite party has two or more stones to deliver consecutively, and may thus play any game they choose without fear of its being spoiled by the other side. After a stone has passed the score, the only penalty attached to a collier or hog, is to be removed off the ice. The ice being filled, the first of the second party plays; his duty is not to touch the opposite party's stone unless it be very near the tee, but to pass by its side and *draw*, that is, to take up an advantageous position near the tee. The first skipper's directions must now be given with care, and he will have to consider whether it be preferable to strike up the first stone nearer the tee and lie guard to it, or to strike out the opposite party's, which we shall suppose already near the tee, or to draw on the other side: the directions must depend on the exact positions of the stones, and of the known good or bad play of the person whose turn it is. The general object of the game is to place as many stones of the same party as near the tee as possible, and to drive out or exclude those of the other; but whether this be done before or only towards the conclusion of the *end*, will depend on the plan of game followed. After all the stones have been played, those of the one party which are nearer than the nearest one of the other, count each stone one, and thus concludes the first end. The party which gains that end now fills the ice for the next *end*, and so on, each party adding together all their winnings until they amount to seven, thirteen, twenty-one, or thirty-one, as happens to be agreed on before playing, to constitute game: sometimes, instead of any particular number as game, the parties play for a certain number of hours, the greatest winners being victors.

"The director or skipper is permitted to order each of his own side what to do, or to attempt to do, and the player must do his utmost to obey the directions. Like the general of an army, the director must be master of the scientific as well as the practical part of the game: he must occasionally lay stratagems, or discover and try to obviate those laid by the other director. He must be cool, understand the temper of his troops, consult the biases in the ice, the effect of the wind, the excellence of the stone to be delivered, and whether sweeping be necessary; and he must especially study the qualifications of the players; for if an indifferent player be ordered to take a difficult shot, he may miss it, and do at the same time much injury to his own party, so that it would have been better had he not made the attempt. He must have also disposed the players judiciously: thus the leader, or first of a side, ought to be a sure player who will lay his stone in the proper place, and above all, not be a *collier*: the second ought also to be good, in case by some accident (for accidents will occur) the first player has not crossed the score; for if the second stone were also a collier, the end must be lost by several shots, unless the opponents are wretched players. Again, the two last players ought to be first-rate, to drive out the opposite winners or to break up the guards, and for this purpose they ought to have strength and weight of stone, as well as certainty of aim: for when the game is crowded, a stroke on a wrong stone may present the other party with several points. The worst players ought to be placed in the middle.

Every player, we have said, is obliged to have a broom in his hand. Previous to the director's orders to play being given, either party may sweep the whole rink clean: when a stone has been played, its own side may sweep the ice before it, between the farther score and tee; after it has passed the tee, his adversaries may ply their brooms. Much may be done by judicious sweeping; a stone may thus, although it would otherwise settle immediately beyond the score, be made to glide up to near the tee; and on the other hand, if the ice be swept too clearly before it, it may pass the tee, when the other party's brooms coming into play may cause it to glide on so far as to be lost. Although therefore the director has the whole charge of the sweeping department, still much depends on the player's sweeping.

There are various points in the game, such as drawing, striking, posting (or passing through between two stones without touching them), hitting, guarding, wicking, &c.: *inwicking* is when the player has to make his stone strike at an angle on the inner side of another so as to repel it farther from the tee, and alter the course of his own towards it; *outwicking* is the reverse of this, and consists in striking the outer side of a friend's stone so as to project it near to the tee: wicking, or brittling, as it is also called, is unquestionably the most beautiful part of the game, and requires most science.

To prevent disputes between parties, there are a number of laws, but as the same have not received the sanction of *all* curling clubs, some regulations are generally agreed on before playing, particularly if it be a set game, called a spiel, when between those of the same club or parish, and bonspiel when between different clubs or districts."

CUVIER, BARON FREDERICK, an eminent naturalist, brother of the illustrious Baron George Cuvier, of whom a memoir is given in the body of the work, was born at Montbeliard, in 1773. He was called to Paris by his brother, and became keeper of the menagerie at the Jardin des Plantes in 1804, a place which enabled him to make some valuable observations on the economy and physiology of animals. These are published in the *Annales du Muséum*, and, with other valuable works on natural history, led to his election into the academy of sciences, to the inspector-generalship of the university, to the legion of honour, to the royal society of London, and lastly to the chair of comparative physiology at the Jardin des Plantes. He was also a contributor to several scientific journals, and the principal labourer in the *Histoire des Mammiferes*, published in conjunction with M. Geoffroy St Hilaire. His death took place in 1838.

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* *The end* is the term used for all the players having played from one end to the other.

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DAGUERROTYPE, the name applied to a recent invention of M. Daguerre of Paris, by which he fixes upon a metallic plate the lights and shadows of a landscape or figure solely by the action of the solar light. The interest excited in this invention has been increased by the publication of a series of experiments made by our countryman Mr Talbot, directed towards the same object, and producing nearly similar results. So far back as the year 1800, the attention of Sir Humphrey Davy and Mr Wedgwood was directed to the subject by the extraordinary effect produced by light upon the nitrate of silver, which led them to hope that the purposes of the artist might be assisted by the susceptibility of the metallic oxide. The first experiment was made by Mr Wedgwood for the purpose of copying paintings upon glass, and was eminently successful; the copy obtained possessing all the figures of the original, in their native shades and colours: it was also in a high degree permanent, so long as it was preserved from the action of the light. The same gentleman discovered that the shadow of an opaque object thrown upon the paper was copied in outline with great correctness; but though both these celebrated chemists were constant and persevering in their endeavours to render the drawing permanent, they were entirely unsuccessful; the lighter shades darkening by exposure and thus obliterating the impression. Their failure in this important object was published with their experiments in the philosophical transactions, and both having given up the attempt, their discoveries have since remained unimproved. But in the meanwhile M. Daguerre, it appears, struck by some hints he had received from a friend, has steadily pursued his experiments for the last twenty years, and having at length attained his object, has declared his discoveries, and claimed the invention as his own.

A polished metallic plate is the substance made use of, and being placed within the apparatus is in a few minutes removed and finished by a slight mechanical operation. The sketch thus produced is in appearance something similar to aquatint, but greatly superior in delicacy; and such is the extraordinary precision of the detail that the most powerful microscope serves but to display the perfection of the copy. The first efforts of the inventor were directed towards architectural subjects, and a view of the Louvre and Notre Dame are among the most admired of these engravings. In foliage he is less successful, the constant motion in the leaves rendering his landscape confused and unmeaning: and the same objection necessarily applies to all moving objects, which can never be properly delineated without the aid of memory. But in the execution of any stationary subject, buildings, statues, or the bodies of animals, the facsimile is perfect; and the value of the invention may therefore be easily conceived.

Several eminent artists have examined the designs, and were equally delighted with the precision and delicacy of the representation. Among the sketches exhibited by the projector was a marble bas relief and a plaster imitation; the first glance was sufficient to detect the difference between these two; and in three views of a monument taken in the morning, noon, and evening, the spectators easily distinguished the hours at which they were executed, by the difference of the light, though in the first and last instances, the sun was at an equal altitude. But perhaps the anatomist or zoologist will derive the greatest advantages from the discovery, the form of the animal being as easily studied from the drawing as from the original, and the most powerful microscopes not having hitherto detected the smallest deficiency in the details. Nor is the invention devoid of interest to the astronomer, for the light of the moon is sufficient to produce the usual results, requiring only additional time for its operations. The following extract from "Le Commerce" is sufficient to substantiate its value in this respect:—"The experiments on the light of Sirius have confirmed the testimony of natural philosophy, and abundantly proved that the stars are bodies of the same nature as the sun; at the request of M. Biot, M. Daguerre has submitted his apparatus to the influence of the light of the moon, and has succeeded in fixing the image of that luminary. We observed that the image had a trail of light something like the tail of a comet, and we ascribed it to the movement of the body during the operation, which is of much longer duration than that by the light of the sun."

In the spring of 1834 Mr Talbot began a series of experiments, with the hope of turning to useful account the singular susceptibility evinced by the nitrate of silver when exposed to the rays of a powerful light; but not being acquainted with the researches of former chemists on the subject, he commenced with the same disadvantages which had baffled the skill and perseverance of Sir Humphrey Davy. The plan he at first proposed was, to receive a well-defined shadow upon a sheet of paper covered with a solution of nitrate of silver, by which means the part shaded would remain white, while the surrounding portion was blackened by exposure to the light. But he was well aware that the sketch thus obtained would require to be protected from the rays of the sun, and examined only by an artificial light. He had carried these inquiries to some extent, and became possessed of several curious results before he learnt the steps which others had taken to attain the same object;

and the decided terms in which Sir Humphrey Davy expresses his failure might perhaps have discouraged his less experienced follower, had he not fortunately already conquered the difficulty which had destroyed the hopes of the former chemists.

"In the course of my experiments directed to that end," says Mr Talbot, "I have been astonished at the variety of effects which I have found produced by a very limited number of different processes when combined in various ways; and also at the length of time which sometimes elapses before the full effect of these manifests itself with certainty. For I have found that images formed in this manner, which have appeared in good preservation at the end of twelve months from their formation, have nevertheless somewhat altered during the second year." He was induced from this circumstance to watch more closely the progress of this change, fearing that in process of time all his pictures might be found to deteriorate; this however was not the case, and several have withstood the action of the light for more than five years.

The images obtained by Talbot's process are themselves white, but the ground is differently and agreeably coloured; and by slightly varying the proportions, and some trifling details of manipulation, any of the following colours were readily obtained:—light blue, yellow, pink, brown, black, and a dark green nearly approaching to black.

The first objects to which the process was applied were leaves and flowers, which it rendered with extraordinary fidelity, representing even the veins and minute hairs with which they were covered, and which were frequently imperceptible without the aid of a microscope. Mr Talbot goes on to mention that the following considerations led him to conceive the possibility of discovering a preservative process. Nitrate of silver, which has become darkened by exposure to the light, is no longer the same chemical substance as before; therefore, if chemical re-agents be applied to a picture obtained in the manner already mentioned, the darkened parts will be acted upon in a different manner from those which retain their original colour, and after such action they will probably be no longer affected by the rays of the sun, or, at all events, will have no tendency to assimilate by such exposure; and if they remain dissimilar, the picture will continue distinct, and the great difficulty be overcome.

The first trials of the inventor to destroy the susceptibility of the metallic oxide were entirely abortive; but he at length succeeded to an extent equal to his most sanguine expectations. The paper employed by Mr Talbot is superfine writing paper: this is dipped into a weak solution of common salt, and dried with a towel till the salt is evenly distributed over the surface: a solution of nitrate of silver is then laid over one side of the paper, and the whole is dried by the heat of the fire. It is however necessary to ascertain by experiment the exact degree of strength requisite in both the ingredients, for if the salt predominates, the sensibility of the paper gradually diminishes, in proportion to this excess, till the effect almost entirely disappears.

In endeavouring to remedy this evil, Mr Talbot discovered that a renewed application of the nitrate not only obviated the difficulty, but rendered the preparation more sensitive than ever; and by a repetition of the same process the sensibility of the paper will increase to such a degree, as to darken of itself without exposure to the light. This shows that the attempt has been carried too far, and the object of the experimentalist must be to approach, without attaining this condition. Having prepared the paper and taken the sketch, the next object is to render it permanent, by destroying the susceptibility of the ingredients for this purpose. Mr Talbot tried ammonia and several other re-agents with little success, till the iodide of potassium, greatly diluted, gave the desired result: this liquid, when applied to the drawing, produces an iodide of silver, a substance insensible to the action of light. This is the only method of preserving the picture in its original tints, but it requires considerable nicety, and an easier mode is sufficient for ordinary purposes. It consists in immersing the picture in a strong solution of salt, wiping off the superfluous moisture, and drying it by the heat of the fire; on exposure to the sun the white parts become of a pale lilac, which is permanent and immovable. Numerous experiments have shown the inventor that the depth of these tints depends on the strength of the solution of salt; he also mentions that those prepared by iodine become a bright yellow under the influence of heat, and regain their original colour on cooling. Without the application of one of these preservatives the image will disappear by the action of the sun; but if inclosed in a portfolio, will be in no danger of alteration: this, Mr Talbot remarks, will render it extremely convenient to the traveller, who may take a copy of any object he desires, and apply the preservative at his leisure. In this respect Mr Talbot's system has the advantage over that of M. Daguerre, since it would be scarcely possible for a traveller to burden himself with a number of metallic plates, which in the latter process are indispensable.

Since the publication of the above discovery, numerous candidates have appeared in the field of claiming the palm of originality, while philosophers of every grade and country have eagerly pursued the investigation of the subject. The first we shall notice is M. Niepce, who claims priority even over M. Daguerre; and the account he publishes, if correct, will undoubtedly determine the question in his favour. A letter from M. Bauer is the principal evidence for M. Niepce, who, it appears, mentioned his discovery to this gentleman in the year 1827, while on a visit at Kew, and by the advice of his friend he drew up a memoir on the subject, and caused it to be forwarded to the royal society. This document was however returned, it being contrary to the rules of the association to receive accounts of scientific discoveries unless they detailed the process employed. M. Niepce shortly afterwards returned to France, having presented to his friend several specimens of the newly discovered art, which are still in the possession of M. Bauer. The pictures taken are of two kinds, copies from engravings, and copies from nature; the best of the former is in the possession of Mr C[illegible], and is considered nearly equal to those of M. Daguerre, with suitable allowance for twelve years' experience. The specimen taken from nature is however by no means so successful, and is considered inferior to the earliest attempts of his countrymen. M. Bauer distinctly asserts that he possessed copies of engravings produced solely by the action of light, which were capable of being multiplied in the same manner as an ordinary copper-plate; if this be the case, the greatest secret still remains unknown, even to M. Daguerre himself. It is much to be regretted that M. Niepce did not at once publish his extraordinary discovery, with a full detail of the process employed, as he would then have retained the indisputable right to the merit of the invention.

We must leave this point, and now proceed to notice the claims of Mr Havell, in conjunction with Mr Wellmore, who are said to have introduced an important addition to the process pursued by Mr Talbot, a full description of which is contained in a letter to the editor of the Literary Gazette. The first attempt of Mr Havell was directed towards an etching, by Rembrandt, of an old man reading, and the result was a reversed facsimile—a negro face surmounted by locks of silver; the disappointed artist discovered that a second transfer entirely destroyed the spirit of the picture. To remedy this evil he had recourse to a new process, by which this defect was indeed removed, but the great merit of the art, namely, its self-acting power, was lost. A thin plate of glass was laid on the subject to be copied, upon which the high lights were painted with a mixture of white lead and copal varnish, the proportion of varnish being increased for the darker shading of the picture. The next day Mr Havell removed the white ground with the point of a penknife, to represent the dark etched lines of the original, and a sheet of prepared paper having been placed behind the glass, and thus exposed to the light, a tolerable impression was produced; the half tints had however absorbed too much of the violet ray, an imperfection which was remedied by painting the parts over with black on the other side of the glass; if allowed to remain too long exposed to the sun's rays the middle tints became too dark and destroyed the effect of the sketch; about ten minutes in a powerful sun was considered sufficient. Another method employed by Mr Havell was to spread a ground composed of white lead, sugar of lead, and copal varnish, over a plate of glass, and having transferred a pencil drawing in the usual manner, to work it out with the etching point till it bore the appearance of a spirited ink drawing, or in the hands of an engraver a highly finished engraving. The above process Mr Havell made public under the impression that it had been hitherto overlooked, but Mr Talbot hearing that he was about to apply for a patent, laid claim to the improvement as his own, and not only pointed out some parts of his former memorial where it was distinctly mentioned, but also produced several drawings made precisely in the manner described; he also laid before the royal society a new method of preparing the sensitive paper, which consists in immersing it in a solution of nitrate of silver, and, after washing it with bromite of potassium, the nitrate of silver is again applied, the preparation being dried by the fire between each operation; the paper thus treated is extremely sensitive, changing with the feeblest daylight, first to a bluish green, then to olive green, and finally to black.

A letter to Mr Talbot from his friend M. Biot has also been published, and contains many interesting experiments. After commenting upon the value of the discovery, he continues—"The interest with which I viewed this circumstance engaged me to make some experiments upon your preparation, in order to vary its application to the researches in which I am occupied. First—I wished to know whether the change of colour was in any degree influenced by the paper itself; I therefore spread the substance on a piece of white unglazed porcelain instead of paper, taking care to operate by night, and drying it each time at the fire, as you say: I thus obtained a dry solid coating upon the porcelain, which I shut up in a dark place until the morning. In the morning I took it out and found it of a pale sulphur yellow colour; I then presented it to the daylight at an open window looking north, the weather was then very cloudy, yet no sooner had I so presented it than already it was turned green, and soon afterwards it became black. I then wished to know whether the preparation would succeed equally well if not dried at the fire; I therefore, in a darkened room, mixed the aqueous solution of bromide of potassium with that of nitrate of silver, a precipitate fell, which I spread on a porcelain plate, and left it to dry in the dark; the next day I wrapped it in several folds of paper, and brought it into another room to show it to a friend; but having taken off the covers in a dark corner of the room in order to exhibit the original colour, pale lemon yellow, instantly we saw its tint become green, and I had hardly time to present it to a window opening to the north before its colour had passed to dark olive green, after which it almost immediately became nearly black. I do not think it possible to find any substance more sensitive to light."

Meanwhile, the invention of M. Daguerre has been purchased by the French government; a yearly pension of 6000 francs having been settled on M. Daguerre, and another of 4000 francs on M. Niepce, the son of the gentleman (deceased) by whose experiments the invention was originally suggested. On the 19th Aug. 1839, M. Arago divulged the secret to a very crowded meeting of the Academie des Sciences. M. Daguerre's process is as follows:

A plate of copper thinly coated with silver is washed with a solution of nitric acid, for the purpose of cleansing its surface, and especially to remove the minute traces of copper, which the layer of silver may contain. This washing must be done with the greatest care, attention, and regularity. M. Daguerre has observed, that better results are obtained from copper plated with silver, than from pure silver; whence it may be surmised, that electricity may be concerned in the action.

After this preliminary preparation, the metallic plate is exposed, in a well-closed box, to the action of the vapour of iodine, with certain precautions. A small quantity of iodine is placed at the bottom of the box, with a thin gauze between it and the plate, to sift the vapour, as it were, and to diffuse it equally. It is also necessary to surround the plate with a small metallic frame, to prevent the vapour of iodine from condensing in larger quantities round the margin than in the centre; the whole success of the operation depending on the perfect uniformity of the layer of ioduret of silver thus formed. The exact time to withdraw the sheet of plated copper from the vapour, is indicated by the plate assuming a yellow colour. M. Dumas, who has endeavoured to ascertain the thickness of this deposit, states that it cannot be more than the millionth part of a *millimètre*. The plate thus prepared is placed in the dark chamber of the camera obscura, and preserved with great care from the faintest action of light. It is, in fact, so sensitive, that exposure for a tenth of a second is more than sufficient to make an impression on it.

At the bottom of the dark chamber, which M. Daguerre has reduced to small dimensions, is a plate of ground glass, which advances or recedes until the image of the object to be represented is perfectly clear and distinct. When this is gained, the prepared plate is substituted for the ground glass, and receives the impression of the object. The effect is produced in a very short time. When the metallic plate is withdrawn, the impression is hardly to be seen, the action of a second vapour being necessary to bring it out distinctly; the vapour of mercury is employed for this purpose. It is remarkable, that the metallic plate, to be properly acted upon by the mercurial vapour, must be placed at a certain angle. To this end, it is enclosed in a third box, at the bottom of which is placed a small dish filled with mercury. If the picture is to be viewed in a vertical position, as is usually the case with engravings, it must receive the vapour of mercury at an angle of about 45°. If, on the contrary, it is to be viewed at that angle, the plate must be arranged in the box in a horizontal position. The volatilization of the mercury must be assisted by a temperature of 60° of Reaumur (or 167° of Fahrenheit.) After these three operations, for the completion of the process, the plate must be plunged into a solution of hypo-sulphite of soda. This solution acts most strongly on the parts which have been uninfluenced by light; the reverse of the mercurial vapour, which attacks exclusively that portion which has been acted on by the rays of light. From this it might perhaps be imagined, that the lights are formed by the amalgamation of the silver with mercury, and the shadows by the sulphuret of silver formed by the hypo-sulphite. M. Arago, however, formally declared the positive inability of the combined wisdom of physical, chemical, and optical science, to offer any theory of these delicate and complicated operations, which might be even tolerably rational and satisfactory. The picture now produced is washed in distilled water, to give it that stability which is necessary to its bearing exposure to light without undergoing any further change. The art of fixing the colours of objects has not hitherto been accomplished; and another important desideratum is, the means of rendering the picture unalterable by friction. The substance of the pictures executed by the Daguerrotype is, in fact, so little solid—is so slightly deposited on the surface of the metallic plate, that the least friction destroys it, like a drawing in chalk: and at present, it is necessary to cover it with glass.

DAHLIA, (*a*.) The Dahlia, which now forms so prominent a feature in the flower-garden, was named in honour of Andrew Dahl, a botanist of Sweden. Wildenow objected to the term, under an erroneous impression that it had previously been appropriated to another genus; and adopted the name Georgina; but he has not been followed by subsequent writers. Others objected to it from its similarity to Dalea, a genus already established after our countryman Dale. The name Dahlia is now, however, so well confirmed, that it may bid defiance to the caprice of modern botanical name-changers. It is, notwithstanding, very desirable that attention be paid to the proper pronunciation of the word. The *a* should have the open sound, as in father; it will then be clearly distinguishable from the older name Dalea. The genus is now principally divided into two species, *superflua* and *frustranea*, in allusion to the florets of the rays of the former abounding in seed, whilst those of the latter species are barren. Other specific distinctions were first adopted, but they all proved unstable; and from the proneness of the Dahlia to sport into such numerous varieties, it may be doubted whether the present distinction will prove permanent.

These splendid plants are natives of Mexico, and though noticed by the Spaniards about the middle of the seventeenth century, did not attract much attention till they had flowered at Madrid, in 1790, when Cavanilles described them in the first volume of his Icones, published in the following year. In 1802, he sent plants to Paris, where they were successfully cultivated by Monsieur Thouin, who, shortly afterwards, published coloured figures and a description of them. The first introduction of the Dahlia into England was, according to the *Hortus Kewensis*, by the marchioness of Bute, in 1789, but the plants, it may be presumed, were soon lost. In 1802 and 1803, others were sent from Paris; and in 1804, seeds from Madrid; yet, for several years, they were scarcely heard of amongst us. Their habits being unknown, their increase was slow; whilst, on the continent, innumerable and splendid varieties were produced; so that, after the peace, in 1814, they were poured upon us in all the variety of their present tints; exciting the astonishment of every beholder, and the joy of those who could number such beauties amongst their own collections. Since that time they have been rapidly increased and improved; and England can now boast of varieties as superb as any in the world.

Early sown seeds produce plants that will flower in the succeeding autumn. The more certainly if forced on a hot-bed. Roots keep very well in sand, in a dry cellar. In dividing them, the old stems may be slit, and a portion must be retained to each plant. Plant old roots in the first week of April; or pot them, force in a hot-bed, and turn into the borders when three or four inches high. A few may be retained in large pots; they will be less luxuriant, and flower earlier. Train one stem only from each root, and pinch off the lower-side shoots. The superfluous shoots from old roots, when taken off, may be planted in the shade, under a hand-glass, and will readily grow, as well cuttings of the older stems. Or cuttings of fine varieties may be grafted on the tubers of common ones, merely by splicing them together, tying, and enclosing them in a little clay, before they are potted in mould: they should then be put in a hot-bed and shaded. A gravelly soil checks their luxuriance and produces most flowers.

DALLAS, SIR GEORGE, Bart., was descended from an ancient family long established at [illegible] in Scotland, and was born in London, on the 6th of April, 1758. He was educated principally at Geneva, under the care of Mr Chauvet, a distinguished minister of the Swiss Church, together with his brother, the late right honourable Sir Robert Dallas, who afterwards became a leading ornament of the English bar, and lord chief justice of the court of common pleas. At the age of eighteen, Sir George (then Mr) Dallas sailed for Bengal, as a writer in the service of the East India Company; and, having given proof of the most promising abilities, was, soon after his arrival in India, appointed to a station of some importance at

Ramgur. He had previously acquired considerable celebrity by a sprightly and ingenious poem, descriptive of the adventures of an Indian voyage, and of the first impressions of a youthful mind on finding itself surrounded by objects so remote from European associations. This work was afterwards published at Calcutta, under the title of "The India Guide," and was dedicated to the celebrated Anstie, whose popular poem, "The Bath Guide," had suggested to the author the idea of a similar undertaking. In the circles of Calcutta it excited a peculiar interest, as well from the circumstance of its being the first publication which ever issued from the press of India, as from the vivid pictures it presented of social life and manners in the east.

From the post to which he was originally appointed, Mr Dallas was soon promoted, at the express desire of Mr Hastings, to the more important charge of superintendent of the collections at Raageshay. A selection so honourable to its object was amply justified by the ability and discretion with which he performed the duties attaching to an arduous and highly responsible situation. After holding this office for six years, and serving in other departments in India, he returned to England, for the benefit of his health, and published, in 1789, a pamphlet in vindication of Mr Hastings's character and services. His accurate knowledge of the political state of India eminently qualified him for the task he had undertaken; and, in this eloquent and instructive treatise, he traced with effect the splendid series of actions by which Mr Hastings had consolidated in Asia the supremacy of the British fortunes. Between this period and the date of his next production, Mr Dallas took a leading part in the debates at the India House, exhibiting on every question that came before the court of proprietors a masterly acquaintance with the principles of trade, and an extent of general information which gave him ever afterwards a decided influence in that assembly. In 1793 he published "Thoughts upon our present Situation, with Remarks upon the Policy of a War with France." The success of this work, which made a marked impression upon the public, and speedily went through several editions, was commensurate with the spirit of its execution. He also wrote, while on a visit to a relative in the north of Ireland, several treatises addressed to the inhabitants of that part of the kingdom, in which the signs of political convulsion were at the time unhappily apparent. In the same year appeared the first of his "Letters to Lord Moira, on the Political and Commercial State of Ireland," which, at the particular request of Mr Pitt, having been brought out by numbers in the "Anti-Jacobin," were afterwards embodied in a separate work.

In 1798, by patent, bearing date the 31st of July, he was raised to the dignity of a baronet of Great Britain. He sent to the press, in 1799, "Considerations on the Impolicy of treating for Peace with the present Regicide Government of France," and soon after came into parliament as representative of the borough of Newport, in the Isle of Wight. His parliamentary career, though not of long duration, was distinguished by several brilliant demonstrations of ability. Had his health permitted him to continue his legislative functions, he would doubtless have attained the highest honours of the senate, being gifted by nature with great powers of elocution. While in parliament, he published "A Letter to Sir William Pulteney, Bart., Member for Shrewsbury, on the Subject of the Trade between India and Europe." After the appearance of this publication, he resigned his seat in parliament, and passed some years in Devonshire, for the benefit of the climate. But, though comparatively retired from public life, he was a sagacious observer of political events, and availed himself of several opportunities which afforded scope for the exercise of his literary talents. His knowledge of the British interests in the East was shown in a defence, which he published in 1808, of the wars undertaken by the marquis Wellesley in the Deccan and Hindostan. Shortly before the discussions which took place, in 1813, on the renewal of the East India Company's charter, Sir George published a very interesting tract on the religious conversion of the Hindoos. It appeared anonymously, under the title of "A Letter from a Field Officer at Madras." The last, and not the least interesting of his published works, was his Biographical Memoir of his son-in-law, Sir Peter Parker, Bart., captain of his Majesty's frigate Menelaus.

Sir George married, on the 11th of June, 1788, the Hon. Catharine Blackwood, youngest daughter of Sir John Blackwood, Bart., and the Baroness Dufferin and Claneboye. He died at Brighton on the 14th Jan. 1833.

DALLAWAY, James, Vicar of Letherhead, Surrey, and of Slynfold, Sussex; was born at Bristol, Feb. 20, 1763; and having passed his youth at the grammar school of Cirencester, became a scholar on the foundation of Trinity college, Oxford. Here he made himself known by his English poetry, some of which was characterized by great sweetness and facility of versification; but the same talent, when mingled with the dangerous tinge of satire, was destined to become fatal to his early prospects. When his time had arrived to be elected fellow, his name was passed over, without any reason assigned; but the cause was generally supposed to have been some satirical verses upon an influential member of the society. With his future prospects thus blighted, he left the university, having taken his degree of M.A. Dec. 3, 1784; and went to serve a curacy in the neighbourhood of Stroud. At a subsequent period he resided in Gloucester; and about the years 1785 to 1796 he was employed as the editor of Bigland's Collections for Gloucestershire.

Mr Dallaway's first publication was "Letters of the late Dr Rundle, Bishop of Derry, to Mrs Sandys, with introductory Memoirs," 2 vols. 8vo. 1789. In the same year he was elected a fellow of the society of antiquaries; and in 1792 he published in 4to. "Enquiries into the Origin and Progress of Heraldry in England, with Observations on Armorial Ensigns." This was dedicated to Charles duke of Norfolk, E. M. a circumstance which introduced him to the notice of his grace, who was ever after his warm and constant patron. Through the duke's introduction he was appointed chaplain and physician to the British embassy at the Porte. He had previously taken the degree of Med. B. at Oxford, Dec. 10, 1794. After his return he published, under the auspices of the marquis of Bute, "Constantinople, Ancient and Modern, with Excursions to the Shores and Islands of the Archipelago, and to the Troad, 1797," 4to. In 1802 he communicated to the society of antiquaries an Account of the Walls of Constantinople; which is printed, with four plates, in the "Archæologia," vol. xiv. In 1792 he wrote the introduction to Naylor's "Collection of Coats of Arms borne by the Nobility and Gentry of the County of Gloucester."

On the 1st of Jan. 1797, Mr Dallaway was appointed secretary to the earl marshal, which office brought him in close connection with the college of arms, but did not constitute him a member of the corporation. He continued secretary until the death of his patron in 1815; and was re-appointed to it by lord Henry Howard, who, in 1816, was nominated deputy earl marshal; and upon his lordship's death, in 1824, a bill having passed to enable the present duke of Norfolk to execute the functions of his office in person, Mr Dallaway was a third time appointed to the official situation of secretary to the earl marshal. In 1799 the duke of Norfolk presented him to the rectory of South Stoke in Sussex; which he resigned in 1803, on his grace procuring him the vicarage and sinecure rectory of Slynfold, which is in the patronage of the see of Chichester. In 1801, in exchange for the rectory of Llanmaes in Glamorganshire, which had been given to him by the marquis of Bute, he obtained the vicarage of Letherhead, in the gift of the dean and chapter of Rochester. The two benefices of Letherhead and Slynfold he held until his death. In 1811 he also obtained the prebend of Hova Ecclesia in the cathedral church of Chichester; which in 1816 he exchanged for that of Ferring; the latter he afterwards resigned in 1826 to the late Rev. Edmond Cartwright, on that gentleman's succeeding him in the editorship of the History of Western Sussex.

In 1800 Mr Dallaway published in 8vo. "Anecdotes of the Arts in England, or comparative Remarks on Architecture, Sculpture, and Painting, chiefly illustrated by Specimens at Oxford." In 1803 he edited, in five volumes 8vo. "The Letters and other Works of Lady Mary Wortley Montague, from her original MSS. with Memoirs of her Life." In 1806 he published in 8vo. "Observations on English Architecture, Military, Ecclesiastical, and Civil, compared with similar Buildings on the Continent, including a critical Itinerary of Oxford and Cambridge, &c., and Historical Notices of Stained Glass, Ornamental Gardening, &c." In 1816 he published a work entitled "Of Statuary and Sculpture among the Ancients, with some account of Specimens preserved in England," 8vo.; all but a small portion of which perished in the fire at Mr Bensley's printing office. Previously to this time, in the year 1811, he had been engaged, by the late duke of Norfolk, to edit, at his grace's expense, "The History of the Three Western Rapes of Sussex," for which very ample collections had been made by Sir William Burrell, and deposited in the British Museum. The first volume, containing the Rape and city of Chichester, was published in 1815; the first part of the second volume, containing the Rape of Arundel, appeared in 1819; the Rape of Bramber he relinquished to the late Rev. Edmund Cartwright, F.S.A., who published it in 1830. In 1821 he privately printed, as an accompaniment to thirteen etchings by Mrs Dallaway, two letters descriptive of the vicar's garden at Letherhead, addressed to his friend R. Duppa, Esq., a very lively and animated description of a beautiful spot. In 1823 he communicated to the society of antiquaries, "Observations on the first Common Seal used by the Burgesses of Bristol," printed (with a plate) in the "Archæologia," vol. xxi. In 1834 he published in 4to. "William Wyrcestre Redivivus. Notices of Ancient Church Architecture in the Fifteenth Century, particularly in Bristol; with Hints for Practical Restorations." An article from his pen entitled "Bristol in the Fifteenth Century," appeared in "The Retrospective Review," new series, vol. ii. in 1828; and these several papers were reprinted at Bristol, under the title of "Antiquities of Bristol in the Middle Centuries, including the Topography, by William Wyrcestre, and the Life of William Canynge." This last was an essay by Mr Dallaway, read at the Bristol institution in April, 1831. In 1826 Mr Dallaway superintended, for Mr Major, the bookseller, a finely embellished edition of Walpole's "Anecdotes of Painting," which includes Vertue's "Memoirs of the English Painters and Engravers." However accomplished in his acquaintance with art, and refined in his taste, Mr Dallaway may have been, it cannot be concealed that he was by no means calculated for either a biographical or a topographical historian; and both this work and his History of Sussex abound with marks of haste, carelessness, and inaccuracy. His last work was an extended and revised edition of the work of 1806 on "Architecture in England;" this was published early in the year 1834. His death took place on the 6th of June in the same year.

DARLINGTON; a market-town in the county of Durham, distant from Newcastle thirty-three miles, from York forty-eight. It is situated near the Skerne, a small river which falls into the Tees. It consists of several streets, diverging from a spacious square, or market-place. The principal manufactures of Darlington are carpets, and flax and worsted spinning; there are also several breweries, tanneries, roperies, and iron and brass foundries: the Skerne, in its course, turns mills for corn, &c. and propels the machinery of very extensive worsted mills; and many of the working class are employed in wool-combing, and other avocations connected with the mills. The Darlington and Stockton railway has been of great benefit to the town. Population in 1831, 8574.

DARTFORD; a market-town in Kent, fifteen miles from London, on the great road to Canterbury. Near it are some extensive powder mills; also silk mills and paper mills. The powder manufactured here is famed for its fineness, and is much used by sportsmen. Dartford is noted as the place where Wat Tyler's insurrection commenced. Population in 1831, 4715.

DARTMOOR (*a.*); a remarkable moorish district in Devonshire, extending about twenty miles in length and eleven in breadth. The external aspect of this interesting district (the beauties of which have been sung by Carrington, q. v.) is extremely wild and dreary, presenting an almost endless continuation of lofty hills, craggy rocks, and narrow valleys strewed with enormous masses of granite, which some convulsion of nature in bygone days has probably severed from the surrounding eminences. Indeed, innumerable masses of stone of various dimensions lie scattered over the general surface of the moor, and those which lie on the sides of the hills, are moulded into the wildest and most impressive forms imaginable. Some of these heights rise abruptly into peaks, crowned with huge piles of stone, and are called "Tors."

There are several Druidical or Celtic remains on the moor, as the circles, the logans, and the rock basins abundantly testify. At Drewsteignton, there is a very remarkable logan, or rocking stone, in the rocky channel of the Teign river, but its oscillating powers have nearly ceased. The base or understone of this vast mass of granite is deeply set in a bed of rocks, of which, indeed, it forms a part. The logan stone is of irregular shape, its height, or thickness, varying from six or seven to ten feet; its length is about eighteen feet; the top flattish. When rocked, it is said to have emitted an audible murmur of a peculiarly awful nature. The scenery around this monument of a remote age, is of uncommon grandeur. There are one or two other logan stones in the same neighbourhood, but of less dimensions. The only cromlech on the moor, is at Shilston, near Drewsteignton, which bears the name of the Spinster's Rock, from an absurd tradition that three spinsters, or unmarried damsels, constructed it one morning for their amusement before breakfast.

Prince Town, a small place containing about thirty houses, is worthy of notice, as being the site of Dartmoor prison, where, during the last war, a great number of prisoners were confined. From May 29, 1809, to April 22, 1814, no less than 12,679 unhappy victims were incarcerated there; about 1117 deaths occurred during that period, of which 1095 were French, and twenty-two Americans. This immense and remarkable structure is exceedingly well adapted for the object designed. Elevated at least 1400 feet above the sea, it comprises within its walls a circumference of thirty acres, enclosed on its eastern, northern, and southern directions, by a lofty wall, and on the western part, or front, which being straight, blunts the circumference, by two handsome residences appropriated to the agent and surgeon, and having between them a Cyclopean gateway, surmounted with the motto, "*Parcere subjectis.*" The first stone was laid in March, 1806. The edifice is principally composed of the granite so plentiful on the moor, and was completed at a cost of about £127,000.

A railway between Prince Town and Sutton Pool, near Plymouth, a distance of more than twenty-five miles, was opened for public use in September, 1823, at a cost of £39,983, raised principally by the influence of Sir Thomas Tyrwitt, who subscribed upwards of £3000 towards the undertaking. Several attempts have been made at various periods to plant and improve Dartmoor, and it is probable that it will be ultimately enclosed.

DAVIES, CECILIA, formerly a celebrated songstress on the Italian and German as well as the English stages. She first appeared at the Opera in London in 1773, and was considered as second to Billington only among English female vocalists. She had previously performed for some time in Italy, where she was known by the name of l'Inglesina, and even the Italians allowed that her powers were surpassed by those of Gabrielli alone. Subsequently she returned to the continent with her sister, who was an excellent performer on the harmonica; and became prima donna at the principal Italian and German theatres, and a great favourite of the empress Maria Theresa at Vienna, where she had operas written expressly for her by Metastasio, and composed by Hassee. She also taught the arch-duchesses (afterwards queens of France, Spain, and Naples) to sing and act in the dramas which were performed at court on the empress's birth-day. In her last and very advanced years she was in much poverty. Through the recommendation of lord Mount Edgecumbe, George IV. gave her a handsome present, which enabled her to pay debts which she had contracted. From the national benevolent institution, she obtained a pension of £25 per annum, which was all she had latterly to depend on, with an occasional donation from the royal society of musicians, or a trifling present from a few old friends who knew her in better times. She died in July 1836, aged ninety-four.

DAVIES, ROBERT, a bard of Wales, who gained at different Eisteddfodau the following silver medals and premiums:—At Caerwys, Flintshire, May 29. 1798, the Gwyneddigion medal, for the best Welsh poem on "the Love of our Country;" at Wrexham, Sept. 13, 1820, a splendid silver medal (the chain medal) and premium of £8 for the best Welsh elegy on "the Death of His Most Gracious Majesty king George III.;" at Brecon, Sept. 25, 1822, the Gwyneddigion medal for the best Welsh ode on "the old Customs and Manners of the Ancient Britons;" at Ruthin, March 1, 1825, a silver medal and premium for the best Welsh translation of the celebrated speech of his royal highness the duke of York in the house of Lords against the Roman Catholic Emancipation Bill; at Denbigh, Sept. 16, 1828, a silver medal and premium of three guineas for the best englyn on "the Air Balloon;" at Beaumaris, August 28, 1832, a splendid silver medal and premium of £15, the gift of Sir Edward Mostyn, bart., of Talacre, Flintshire, for the best Welsh poem on "David playing the Harp before Saul." For his celebrated ode on "the Courage of Caractacus against the Romans," he received a medal and premium; with several other distinguished rewards too numerous to detail. Mr Davies published an excellent Welsh Grammar, and also Diliau Bardas, &c. He died at Nantglyn, near Denbigh, Jan. 1, 1836, aged sixty-six.

DAWLISH; a town in Devonshire, beautifully situated in a valley open to the sea on one side, and on the other sheltered by richly cultivated rising grounds. The beauty of its environs and the mildness and salubrity of its air, make it a desirable resort for invalids, and it has now become fashionable as a watering place. The *parish* of Dawlish includes the townships of Cockwood, and Higher and Lower Holecomb, and the hamlets of East Town, Middlewood, Shattern, Westwood, and Lithewell. Population in 1831, 3151.

DEAD SEA, (*a.*) Most of the mysterious attributes of the Dead Sea have vanished before the light of modern science. It was believed that it was impossible for a body to sink in it, that fishes could not live in its waters, that birds were unable to fly across it, and that if they attempted to do so, they fell down instantly dead. The poisonous nature of its waters, or of the vapours which arise from its surface, have been fully disproved. The water is very strongly impregnated with salt, and consequently extremely buoyant. A traveller to the Holy Land, speaking of its effects on a companion who bathed in it, says he described the sensation as extraordinary, and more like lying on a feather-bed than floating on water. On the other hand, he found the greatest resistance in attempting to move through it; it caused his eyes to smart immensely. A piece of stick put into it required a good deal of pressure to make it sink, and when let go, bounded out again like a blown bladder. The water was clear, and of a yellowish tinge, which might have been from the stones at the bottom, or from a hazy atmosphere; there were green shrubs down to the water's edge at one place, and nothing to give an idea of any thing blasting in the neighbourhood of the sea. The idea that no fish or other animal could exist in these waters has been refuted by recent travellers, and specimens of shells have been brought to England.

The pitch that floats on the surface of the water affords the means of subsistence to a considerable number of Arabs, who dispose of it to the Pacha of Egypt, and receive in return scanty rations of food, and a few presents, in the shape of trinkets or trifling articles of dress. The Arabs also furnish themselves with salt, which they prepare from the waters of the lake, by digging pits about the shore, filling them with water, and leaving it to be crystalized by the heat of the sun.

In ancient times bitumen, (pitch,) which is produced from this lake, was used by the Egyptians in embalming their dead. It is said by Josephus, the Jewish historian, to have risen to the surface in masses as big as the body of an ox. Dr Shaw, in his Travels, informs us, that, at the present day, the natives assure him that it rises in large hemispherical masses, which, when they come to the surface, burst with a loud explosion. This, he says, only happens near the shore, for in greater depths the eruptions are supposed to discover themselves in columns of smoke, such as are now and then seen to rise from the surface of the water. This bitumen only differs from our common black pitch, by possessing a sulphurous and fœtid smell when rubbed or burned.

Many old travellers have reported, that at times the ruins of towns are to be seen beneath the surface of the waters, but no writers that can be relied on have ascertained the fact. Philosophers were for some time unable to account for the fact, that the Dead Sea, although constantly receiving the waters of the river Jordan and of some other smaller streams, still remains at the same height; but accurate calculations have been made since that time, and it is proved, that the evaporation that takes place from the surface of so large a body of water is sufficient to account for the circumstance.

Much yet remains to be discovered with respect to the natural history of this interesting lake; but the extreme danger attending any researches in these countries, on account of the constant hostile demonstrations on the part of the native Arabs, has deterred travellers from visiting its neighbourhood.

Rae Wilson, in his Travels in the Holy Land, says,—"To the taste the waters appear decidedly to contain more salt in solution than common sea-water, and in smell they resemble that of Harrowgate, or bilge-water. Crosses are made of the bitumen, which are sold at Jerusalem, and an odd idea is entertained by some persons, that the wearing of this substance serves as an antidote against the plague. Travellers should be on their guard, as there are pits near the lake that it is dangerous to approach."

The apples of Sodom, fair without and bitter within, are considered as fabulous, but Chateaubriand, the French traveller, professes to have discovered a kind of fruit answering the description: he says,—"It grows two or three leagues from the mouth of the Jordan, and is of a thorny appearance, with small tapering leaves. Its fruit is exactly like that of the Egyptian lemons, both in size and colour; before it is ripe, it is filled with a corrosive and saline juice; when dried, it yields a blackish seed that may be compared to ashes."

DEAL; a town in Kent, nineteen miles S E. from Canterbury, and seventy-two E. by S. from London. Here is no harbour, but the ample road-stead, called the Downs, between Deal and the Goodwin Sands, furnishes convenient anchorage for ships during the prevalence of particular winds; and homeward or outward bound vessels generally touch at this port, in proceeding to or from London; the former to land passengers and dispatch letters, notifying their arrival, and the latter to take in letters and provisions. Upper Deal, now a mere village, was probably of anterior origin to the present town, called, by way of distinction, Lower Deal, which consists chiefly of three streets, running parallel with the beach. Boat-building and sail-making, with other pursuits subservient to navigation, constitute almost the sole occupation of the population of Deal, which has considerably decreased since 1821. During the last war, this town was a scene of the utmost activity, from the extensive commerce carried on for the supply of provisions and maritime stores for the shipping; but the port being now less frequented, the trade has necessarily declined. Deal has long been famed as a station for pilots, whose skill, boldness, and courage, have procured them a high degree of reputation. Since the erection of floating lights on the Goodwin Sands, the gallant services of the Deal boatmen have been less in demand. This coast is defended by three castles, erected by Henry VIII. in 1539; which are Deal castle, Sandown castle on the north, and Walmer castle on the south. Here is a custom-house, and likewise a naval store-house; and at Walmer is a naval and military hospital. Population of Deal in 1831, 7268.

DEAN FOREST is situated in the western part of Gloucestershire, between the rivers Severn and Wye, and now extends over 23,373 acres of land. It belongs to the crown, and has been long noted for the value of its timber. During the last war it supplied upwards of a 1000 loads of timber annually for the use of the navy. It also abounds in coal and iron ore: iron appears to have been wrought in the forest both by the ancient Britons and the Romans; and in the reign of Edward I. seventy-two furnaces for smelting iron are recorded to have been built there. It must formerly have been much more thickly wooded, and of much greater extent than at present; for we find that it was anciently so overgrown with oaks, as to have become a notorious harbour for robbers.

The Forest of Dean is divided into six walks, known by the names of their respective lodges or houses, built for the residence of the royal keepers. its government is nominally vested in a lord warden, who is also constable of the castle of St Briavels, formerly the residence of men of eminence in the government of England, six deputy-wardens, four verderers chosen by the freeholders, a conservator, seven woodwards, a chief forester in fee and bow-bearer, eight foresters in fee, a gaveller, and a steward of the Swanimote: many of these offices have, by the lapse of time, now fallen into disuse. The population of the forest by the last census is estimated at 7700, and is almost entirely composed of what are called free miners, who claim, and have for centuries exercised, most important mining privileges. The origin of these privileges is unknown.

but traces of the existence of the Forest of Dean miners are found in the records of our early history. They were summoned to attend the royal armies in the reigns of Edward I. and II., and a tradition still exists in the forest that the exclusive privileges were given them in consequence of their services at one of the early sieges of the town of Berwick-upon-Tweed.

DENMARK; (*a.*) The last census of the kingdom of Denmark was taken in 1834, and that of the dukedoms (Sleswic and Holstein) in 1835: and as the census was ordered to be made up every fifth year, it would in this way never have been simultaneous for the different parts of the realm. But in order to avoid this mischief, it has recently been ordered that the next census of the kingdom shall not be undertaken before 1840, and that it shall include all the possessions of the crown of Denmark.

The result of the last census in the *kingdom* showed that the population was 1,223,797 inhabitants, viz., 605,278 males and 618,519 females, having increased since the beginning of this century 32·3 per cent. The proportion of males to females was as 1000, to 1022, the same as it was thirty years ago at the census of 1801. But this proportion is much greater in other northern countries; and it is an interesting fact, that in the extreme northern countries the relative number of women seems generally to be very much greater than in countries of the temperate zone. Such is the fact in Iceland, where the proportion of females to males is almost as 1100 to 1000. In Sweden the number of females at the census of 1830, compared with that of males, was as 1076 to 1000. Among 1000 men and women existing in 1834 there were alive,—

From birth to the age of 10 years	232·18	From 50 to 60 years	79·65
From 10 to 20 —	210·51	— 60 — 70 —	52·10
— 20 — 30 —	162·75	— 70 — 80 —	24·26
— 30 — 40 —	133·92	— 80 — 90 —	6·13
— 40 — 50 —	98·17	— 90 — 100 —	0·33
		Above 100 —	0·008

Among 1000 men there were 337 married, 632 unmarried, and 31 widowers. Among 1000 women there were 327 married, 587 unmarried, and 86 widows. Among 1000 men and women, 205, or one-fifth, lived in towns, and 795, or four-fifths, lived in the country.

In the *dukedoms* of Sleswic and Holstein the population was 773,788, viz., 385,635 males, and 388,153 females. The increase since 1803 was 28·5 per cent., the interval being 32 years. The proportion between males and females was as 1000 to 1007. Among 1000 individuals existing in the duchies in 1835 there were alive:—

From birth to the age of 10 years	243·69	From 50 to 60 years	75·17
From 10 to 20 —	210·30	— 60 — 70 —	49·60
— 20 — 30 —	157·03	— 70 — 80 —	21·15
— 30 — 40 —	126·74	— 80 — 90 —	4·53
— 40 — 50 —	101·45	— 90 — 100 —	0·29
		Above 100 —	0·007

Among 1000 men there were 330 married, 632 unmarried, and 38 widowers. Among 1000 women there were 352 married, 558 unmarried, and 90 widows. Among 1000 men and women, 174, or rather more than one-sixth, lived in towns, and 826, or five-sixths, lived in the country.

In the *kingdom* the proportion which the deaths bore to the population in the whole period, from 1801 to 1834, was as 1 to 41; but this proportion was much more favourable from the peace (1814) until 1829, being during that period as 1 to 47. In the years 1829 and 1831, the mortality was extremely great. Though Denmark was exempted from the infection of the cholera during those two years, the mortality was as great as in the countries where that plague raged, a part of the kingdom having been scourged by an ague, which seemed very contagious. The number of deaths in those two years amounted to 74,361, averaging in each 37,181, while upon an average of the seven preceding years it only amounted to 24,575, the increase being equal to more than one-half. Out of 1000 deaths there were,—

	In the whole Period from 1801 to 1834.	In the Years 1824 to 1833, taken alone.
From birth to the age of 10 years .	381·61	353·92
— 10 — 20 years . .	40·93	42·83
— 20 — 30 — . .	55·53	56·16
— 30 — 40 — . .	59·42	61·93
— 40 — 50 — . .	68·44	73·35
— 50 — 60 — . . .	87·06	92·07
— 60 — 70 — . .	118·82	121·70
— 70 — 80 — . .	117·96	126·18
— 80 — 90 — . .	59·93	63.86
— 90 — 100 — . .	7·63	7·69
Above 100 — . . .	0·39	0·31
Unknown . . .	2·28	0·00

DESIGN, School of. A grant was made in the parliamentary session of 1836, for the purpose of affording instruction to those engaged in the preparation of designs for the various branches of the manufactures of this country. To carry out this important object, a "School of Design" was established, under the sanction of government, at Somerset house, in the rooms lately occupied by the royal academy, and which was opened on the 1st of June, 1837. The instruction given in this school includes light and shade, colour, modelling, perspective, &c. An opportunity is thus afforded to young persons having a taste for the fine arts, of acquiring a knowledge of the principles and modes of changing and adapting forms of ornament, aided by light, shade, and colour, so as to produce new and elegant combinations; and of acquiring also a knowledge of the chemistry of colours, on which the laws of harmonious colouring are based. Should the experiment of this "School of Design" be a successful one, we may anticipate that a class of practical artists, far higher in education and taste than our present artisans, will be employed in our arts and manufactures, producing a most beneficial action on the social taste and feeling of the entire community.

DEVIL'S BRIDGE, situated in Cardiganshire, in South Wales, between Hafod and Aberystwith, not far from the bottom of the Plinlimmon. It is a single arch, of between twenty and thirty feet span, thrown over another arch, which crosses a tremendous chasm. According to tradition, the lower arch was constructed by the monks of the neighbouring abbey, called Strata Florida abbey, about the year 1087, but this is not correct, as the abbey itself was not founded till 1164. The country people, in superstitious days, deeming it a work of supernatural ability, gave it the strange name by which it is now generally known. Giraldus mentions having passed over it in 1188, when travelling through Wales with Baldwin, archbishop of Canterbury, to preach in favour of the Crusades. The upper arch was built over the other at the expense of the country, in 1753, and the iron balustrades were added by Mr Jones in 1814. The lower arch may be distinctly viewed by looking over the upper bridge; but the whole scene is so enveloped in wood, that the depth is not perceived; and many an incurious traveller has passed the Devil's bridge without distinguishing its circumstances from an ordinary road. The cleft over which these two bridges extend has evidently been enlarged, and was perhaps originally produced by the incessant attack of the impetuous river Mynach on the solid wall of rock. In order to view the scenery of this romantic spot, the visiter should first cross the bridge, and then descend by the right of it to the bottom of the aperture, through which the Mynach drives its furious passage, having descended from the mountains about five miles to the north-east. The effect of the double arch is picturesque; and the narrowness of the cleft, darkened by its artificial roof, increases the solemn gloom of the abyss. On regaining the road the second descent must be made by passing through a small wood, at the distance of a few yards from the bridge, to view the four successive falls from the point of a rock in front.*

DEWSBURY; a market-town in the west riding of Yorkshire, thirty-four miles S. W. from York. It is a place of great antiquity, and was the residence of the Saxons during the heptarchy. It has a very fine appearance from the Wakefield road, where it suddenly breaks upon the sight. The principal manufactures carried on here, are in woollen cloths, blankets, and carpets. This town, from its situation, possesses many commercial advantages, being seated on the Calder, which with the canals affords communication with Liverpool, Manchester, &c. Population of the parish of Dewsbury in 1831, including the townships of Dewsbury, Soothill, Clifton-cum-Heartshead, and Ossett, 19,854.

DIAMOND, (*a*.) In former times, all the diamonds that were known were brought from different parts of India, particularly from the famous mines of Golconda, near Hyderabad, the present capital of the Deccan, in Hindostan; the islands of Molucca and Borneo have also produced many valuable stones: they are always found in an alluvial soil, generally gravel, resting on granite, and not imbedded in any other substance, but appearing like small pebbles with the surface flattened in many parts. The diamond mines of Golconda are now so far exhausted, as to be considered not worth the expense of working. The diamonds which are now brought to Europe are chiefly from the Brazils. When Brazilian diamonds were first imported, the circumstance excited the jealousy of the dealers in East Indian gems, and a prejudice was unjustly raised against the produce of these newly-discovered mines; and although subsequent trials have proved the diamonds of Brazil to be fully equal to those of the East, so difficult is it to remove a prejudice when once it is raised, that to the present day the diamonds of Brazil are considered by some people to be of an inferior kind. The feeling was so strong that in order to obtain a fair price for their stones, the merchants of Brazil were in the habit of sending their cargo in the first instance to Goa, that it might be re-imported from that place into Europe, as the production of the eastern world. Formerly, nearly the whole of the trade in diamonds was monopolized by the Dutch, and at present the cutting and polishing of these gems is in general performed in Holland, on account of the lower price of labour; but the English workman is nevertheless considered much superior.

The art of cutting, splitting, sawing, or polishing diamonds requires great skill, practice, and patience. "It is seldom," says Mr Mawe, "that the same workman is a proficient in all these branches, but he generally confines himself to one. In cutting and polishing a diamond, the workman has two objects in view; first, to remove any flaws or imperfections that may exist in the stone, and secondly, to divide its surface into a number of regularly-shaped polygons. The removal of flaws seems to be the most material object, since the smallest speck in some particular parts of the stone is infinitely multiplied by reflection from the numerous polished surfaces of the gem. When the shape of the rough stone is particularly unfavourable, the workman has to resort to the hazardous operation of splitting. The rule by which the proper place is discovered at which to apply the requisite force is made a great mystery of: but, perhaps, like many other mechanical arts, it depends as much on the dexterity acquired by constant practice, as on scientific knowledge; and in that case the workman himself, although a perfect adept in his business, would find himself unable to impart the knowledge he was in possession of. When the direction in which it is to be split is decided on, it is marked by a line cut with a *sharp*: † the stone is afterwards fixed by strong cement in the proper position in a stick, and then by the application of a *splitting-knife*, the section is effected by the application of a smart blow."

Sometimes, when the section must cross the crystallized structure of the gem, recourse must be had to *sawing*. This is performed as follows: The diamond is cemented to a small block of wood which is fixed firmly to a table, and a line is made with a sharp where the division is intended to take place, which is afterwards filled with diamond-powder and olive-oil: the sawing is then commenced, and if the stone is large, the labour of eight or ten months is sometimes required to complete the operation. The saw is made of fine brass or iron-wire, attached to the two ends of a piece of cane or whalebone, the teeth being formed by the particles of diamond-powder, which become imbedded in the wire as soon as it is applied to the line. The cutting the facets on the surface of the rough stone is a work of labour and skill; the polishing is performed in a mill, which is an extremely simple machine. Diamonds are cut (generally on account of the shape of the rough stone) in various ways, and assume different names in consequence; as a brilliant, a rose, a table, and a lasque diamond: of these the brilliant is the most splendid, from the brilliancy and number of its reflections and refractions. See Mr Maw's Treatise on Diamonds and Precious Stones.

DINGWALL; a borough-town in Ross-shire, Scotland, situated near the western extremity of the Cromarty Firth, distant from Edinburgh 1[illegible]8 miles, from Inverness, twenty. It possesses a small harbour, near which formerly stood the castle of the family of Ross, a fragment of which building is all that now remains. The surrounding country is beautiful and highly cultivated. Population of town and parish in 1831, 2134

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* There is a Devil's bridge in Switzerland of which notice is taken in the body of the work. There are other Devil's bridges among the Alps, the Apennines, and the Pyrenean mountains.

† When a small diamond is broken into four parts, the edge of each quarter is called a sharp.

DISTILLATION, (*a.*) Every liquid which is susceptible of fermentation will yield alcohol, or *spirits of wine*, by distillation, after the first or vinous stage of that chemical action has taken place. Now as all liquids which contain starch or sugar of any kind will ferment if the fermenting principle is present, the juices of all vegetables containing farina or saccharine matter may be employed to obtain alcohol from.

The peculiar flavour of the different spirits obtained from these vegetable substances, depends on the presence of some foreign matter, as an essential oil, &c., for the alcohol or basis is the same, from whatever source it may be obtained.

The process of distillation is founded on the principle of different degrees of caloric being requisite to convert different liquids into vapour. Thus, if water and alcohol are mixed and exposed to a moderate heat, sufficient to volatilize the spirit,—but not to convert the water rapidly into steam,—and the vapour arising from the mixture be collected and condensed in a separate vessel, the liquid will be found to be *stronger*, or to contain more alcohol in proportion to the water, than that from which it was obtained.

The instrument contrived to effect this separation is called a *still*. It consists of a large copper or boiler, with a vaulted *head*, from which rises a funnel-shaped tube, which, being bent downwards, terminates at some distance from the fire of the boiler, in a leaden, copper, or tin tube, made into a spiral form of many turns, and hence called the *worm*. This tube is enclosed in a tub, or vat, capable of holding water, and the end of the worm terminates in a tap, which passes out of the vessel at the bottom.

When the liquid to be distilled is put into the boiler and is heated, the vapour produced passes through the head and into the worm, and, by the coldness of the water in the tub, is condensed into a liquid, which may be drawn off at the tap. This liquid product is called *singlings*, and is again returned to a still, and the process repeated, the resulting condensed liquid being each time stronger, or containing less water, till the spirit is obtained of the requisite purity, or at what is termed *proof*. All spirit for drinking remains diluted with a large proportion of water. Instead of re-distilling the products, after a certain number of times, other chemical processes are employed for the purpose of separating the alcohol from the water, and from any bad-flavoured essential oil which may have been distilled over from the original liquid. These processes are generally termed the *rectification* of the spirit, and vary for every different liquid employed.

There is pretty good evidence for supposing that no less a person than Osiris, the great god of Egypt, was the *first distiller of whiskey* on record; for the Egyptians had, from time almost immemorial, a distillation or brewage from barley, called by the Greeks barley-wine, not inferior, they say, in flavour, and superior in strength, to wine. Allusion is made to this liquor in several passages of ancient writers. The poor people of Egypt drank it instead of wine, and were wont to intoxicate themselves with it, just as our poorer people do with whiskey. It seems also to have been no stranger to the Hebrews; for reference is certainly made to it in the Old Testament, under the name of "strong drink," stronger than wine, and resorted to by determined drinkers for the sake of inebriation. Among the Celtæ in Spain and France, it seems to have been common as a substitute for wine; Polybius speaks of a certain Celtic king of part of Iberia, or Spain, who affected great court pomp, and had in the middle of his hall golden and silver bowls full of this barley-wine, of which his guests or courtiers sipped or quaffed at their pleasure—a custom which, it is said, for many a century prevailed among his Celtic descendants, the reguli chiefs of our Scottish Highlands. The antiquity of this distillation is proved by the Egyptian tradition which ascribed its invention to Osiris. It may not improbably be supposed that the Egyptians communicated the invention to the Babylonians and Hebrews, who transmitted it northwards to the Thracians and Celtæ of Spain and Gaul, who, in their migrations north-westwards, carried it along with them into Ireland and the Scottish Highlands. This barley-wine was called by the Greeks *βρυτον*—(Qu. brew?)—which, in all likelihood, was its Egyptian or Celtic name. Aristotle entertained an extraordinary notion of this potation. Those intoxicated with it, he says, fall *on the back part of their heads*; whereas those drunk with wine fall *on their faces!*

Good Scotch whiskey is made from malt alone; and the following account of the process of preparing the malt for distillation, we have obtained from a person who has had extensive practical experience in Scottish distilleries.

The malt, having received every justice from the maltster, is bruised upon cylinders, and the quantity intended to be mashed is put into the mash pan, an eight hour's notice having previously been given to the officer of excise. Water is then added; the officer being always present. This is the most important part of distillation. If the proper quantity of water be not put in, according to the weight of the grain, and that quantity at a proper heat, it is impossible to extract the proper quantity of worts at the required gravity. Soft or moss water is best for mashing with, or extracting the wort from the malt. The water ought to be kept in a boiling state three or four hours before it is applied to the grain. The weight of the grain being ascertained—(we shall take a medium weight, say nineteen stones per boll or six bushels, and the gravity of the worts to be taken from the mash tun 60°, or to contain sixty pounds of saccharine matter,)—the water is then poured upon the malt at a heat of from 145° to 175° according to the season of the year. In summer, 145° will do, but in winter it may be proper to raise the water to the heat of from 174° to 180°. Now, if grain be of the above weight, and the time of mashing be in the month of November or March, which are the best seasons of the year for mashing, bring your water to the heat of 148°; then for every boll or six bushels, give 135 to 145 gallons of water at the above heat; then instantly commence stirring your mash tun with oars, and continue to do so for about fifty minutes, after which let the tun settle for about forty-five minutes; then turn the discharge cock of the tun, and the worts will drain into the under-back. The worts on being tried should now prove about sixty-two or sixty-three pounds weight saccharometer. These being the first worts, are either pumped up to the coolers, or left in the under-back if it is large enough to contain the second mash also. Should the first worts be pumped up into the coolers, instead of remaining in the under-back, the officer upon the first visit must try the strength of them in the coolers; and if he find them of a higher weight than that of three per cent. above the declared gravity, that constitutes a fraud on the part of the distiller. The mash tun is now prepared for the *second* mash, in order to extract the second worts. In this case the water should be brought up to the heat of from 154° to 160°, and about 160 gallons of water should be added to every boll or six bushels of malt. The mash tun should now be stirred for about an hour and three-quarters to two hours, allowing it to settle about half an hour, before draining the worts into the under-back. The strength of the worts of the second mash should be only some few degrees lower than that of the first mash, and when mixed together, should form the required gravity. When the worts in the coolers have cooled to about 60°, they are let down into the fermenting tun, and the distiller immediately tenders a declaration to the excise officer of the dip and strength of said tun, it being the officer's duty to check said declaration. After the second worts have been drained off, a third water is run into the mash tun, to extract the sparge. This sparge or wort is usually brought off the mash tun at from about twenty-five to thirty pounds weight; it is then pumped up into the copper, and boiled. It must be always kept in a boiling state, or it would sour, and of course be of no use. If the mash tun be stirred by machinery, instead of by oars, then twenty-four or twenty-five minutes will be sufficient for the first mash, and half an hour will be enough to let it stand; and so in proportion with the second and subsequent mashes.

The making of bub.—Bub is composed of wort, beer and porter yeast. A notice must be given to the excise officer four hours before commencing the operation; also the quantity must be declared, and the time when it is to be made. The wort taken to make the bub is from the first worts: if sixty gallons is to be made, forty may be worts, five gallons ale yeast, and ten gallons porter yeast, which in a state of fermentation is applied to the tun. This bub cask or tun is surveyed by the officer on every visit, and the dip and strength ascertained when in operation. The bub must be added in the presence of the officer, and on no account can it be above the declared *gravity*

Fermentation.—When the worts are cooled to as near 60° as possible, they are let down from the coolers into the fermenting tun, or tuns for fermentation, at which time the officer is to ascertain the dip and strength, and insert both in his book. He must also see the bub added, which of course will create an increase in the dip of the tun, for which cause he must make another survey before leaving the place. The tun being thus set, fermentation will take place in the course of eight or ten hours; afterwards the tun begins to gather a head, and the heat increases from 60° to 90° and will perhaps be only three pounds down on the instrument. At this period the officer ought to be very careful of his survey, as the thermometer shows such a heat as more than counterbalances the degrees upon the strain that the tun has attenuated down to. By his next visit, it will be considerably down, perhaps, if the fermentation be quick, to forty-eight or fifty pounds, in which case it will come down eight or ten pounds every four or six hours, until the fermentation comes to eight or five pounds. If it still retains the heat with a little head, it will in all likelihood come down to water, which is excellent work. When the tun has come to from thirty-nine to thirty-three pounds weight, fresh porter yeast ought to be added, about one or one and a half gallons to the 100 gallons of wash in the tun, as the strength of the bub first added is in a great measure gone by that time. When the tun comes to from nineteen to fifteen pounds weight, it ought to get the last yeast; the quantity applied of porter yeast at this time is about three-fourths of a gallon to the 100 gallons of wash; and if at the time the fermentation be slow, the hatch must be kept quite closed until heat is gathered.

English gin, or *Geneva*, is procured from raw barley, oats, and malt, mixed together in certain proportions. Every particle of soluble matter is obtained from these ingredients by repeated mashings. The worts are then made to ferment by the addition of yeast, as for brewing, but the fermentation is continued till all the saccharine matter is converted into alcohol. This fermented liquor is called *wash* by the distillers. The grains are put into the still along with the wash, and the first product being redistilled, the spirit obtained is rectified. The peculiar flavour is given by infusing a few juniper-berries and some hops.

The Dutch employ barley, malt, and rye meal only to distil their Hollands from.

Irish whiskey, potsheen, or *potteen*, owes its peculiar flavour to the mode in which the usual processes are conducted, rather than to any peculiarity in the grains. The barley is wetted with bog water, in order to excite germination, and the malt is dried with turf instead of coal. The malt is mixed with about one-fourth of raw corn, and the mashing is made in a tun, the bottom of which is covered with young heath and oat-husks, to supply the place of a false one. When the wash begins to boil in the still, the fire is suddenly quenched and the spirit which runs, though weak, is of the true flavour. The *singlings* are distilled again and yield the real potteen.

Rum is a spirit obtained from molasses, or the fluid which drains from the crystallizing sugar; the molasses are diluted with water, fermented and distilled. In the distillation acetic ether passes over, and communicates a strong disagreeable flavour to the spirit, which must be subsequently got rid of. The leaves of different plants are put into the still to give a pleasant taste to the rum.

Brandy is distilled from any wines, but the best is procured from weak French wines, which are unfit for exportation. In consequence of the quantity of this spirit consumed, every mode of economizing labour and expense is had recourse to. the principle of these is the adoption of a peculiar mode of distillation, which merits description here, and by which fuel is saved. Instead of a single still there are a series of copper vessels, which we shall distinguish as 1, 2, 3, &c. A tube rises from the top of 1, and is bent down again to pass through the top of 2, to near the bottom of that vessel; from the top of 2 another similar tube communicates in the same way with 3, and 3 again communicates with 4, and so on. These tubes are open at both ends, but are soldered air-tight to the holes in the vessels through which they pass, so that there is no opening to the external air by means of them. Each of the vessels being half filled with the wine to be distilled, the fire is applied to the first only, the vapour which passes over is condensed by, and mixed with, the wine in the second; and as this vapour, by the nature of distillation, contains more alcohol than water, the wine in the second vessel is strengthened by the addition, while it is heated by the caloric disengaged from the vapour; and since a less degree of heat is sufficient to convert this stronger liquid into vapour, that which rises from it contains a yet greater proportion of alcohol to the water. This vapour from 2 is condensed again in 3, the wine in which is thus strengthened more than that in 2 was, and the heat imparted to 3, though less than that which 2 acquired from 1, is yet sufficient to distil the stronger wine contained in 3. The action is continued, if necessary, to four vessels, but usually three are sufficient, and the vapour from the last is condensed in a worm in the usual manner, only instead of water, the tub containing the worm is filled with wine, which getting heated by the process, is pumped back into the first vessel, and is therefore made to boil sooner, and fuel is thus still further economised. This ingenious process was the invention of an uneducated man of the name of Adam, and goes by his name.

Brandy, whatever wine it may have been obtained from, is at first colourless; in France a good deal is used in this state, but the greater part is coloured by different methods. Cognac brandy is put into new oaken casks, and chips of the same wood are also added; the oak communicates a yellow tinge to the spirit, and probably some flavour likewise.

The various liqueurs known by the names of *eau-doré*, *maraschino*, *kirsche-wasser*, &c. consist of brandy, flavoured by the essential oil of different aromatic plants, and sweetened by sugar. *Arrack* is a name given in the east to spirits generally, and has hence been employed here to designate very different liquors, as that obtained from rice, the cocoa-tree, &c.

The fermented liquids obtained from potatoes, beet, carrot, turnips, the fruit of the potato, service-tree, apples, cherries, &c. have been employed with different degrees of success for obtaining alcohol from. In Kamtschatka, grass is made use of for this purpose, and many plants might, doubtless, be employed with advantage, if it were not for the severity of our excise laws; but no friend to his species could wish to see the use of spirits as a *drink* increased in any country.

DOUGLAS, D., an eminent botanist and enterprising traveller, was born at Scone, near Perth, in 1799, of humble but respectable parents. At a very early age he was sent to school, but seems to have had less relish for book-learning than for fishing and bird-nesting and collecting flowers,—a taste which soon ripened into a fondness for the pursuits and objects of natural history, generally, but in particular of botany. This led to his employment in the gardens of the earl of Mansfield, at that time under the superintendence of Mr Beattie, to whom he was bound as an apprentice for seven years. In this situation he devoted his whole heart and mind to the attainment of a thorough knowledge of his business, and acquired that decided taste for botanical pursuits which he so ardently followed in after life. From the gardens at Scone he was removed to those of Sir Robert Preston, at Valleyfield, near Culross, where his botanical taste was much improved by the rich collection of exotic plants cultivated there, and by the contents of a valuable botanical library to which he was kindly permitted access. After remaining two years at Valleyfield, he succeeded in gaining admission to the botanical garden at Glasgow, where he applied to his professional duties with so great a diligence and success as to gain the friendship of all who knew him, and particularly of Dr (now Sir W. J.) Hooker. He was in consequence recommended by that gentleman to the London Horticultural Society, as a botanical collector; and in 1823 was despatched to the United States, where he procured many fine plants, and enriched the Society's collection of fruit-trees. On his return, he was sent in the following year to explore the botanical riches of the country in North-West America, adjoining the Columbia river, and southward towards California. After a long and tedious voyage of above eight months, during which he omitted no opportunity of gratifying his taste for objects of natural history both at sea and the various coasts and islands on which he occasionally landed, he reached the Columbia river on the 7th of April, 1824, and lost no time in commencing his researches. The manner in which he performed his duty to the Horticultural Society cannot be better exemplified than by referring to the vast collections of seeds which from time to time he transmitted home, along with dried specimens, beautifully preserved, and now forming part of the Herbarium in the garden of the Society at Chiswick. Of the genus *Pinus*, he discovered several species, some of which attained to an enormous size. His name, indeed, is associated with all the rare and beautiful plants lately introduced from North-West America, and extensively distributed not only in Britain, but over Europe. To him botanists are indebted for the elegant *Clarkia*, the different species of *Pentsemons*, *Lupines*, *Œnotheras*, *Ribeses*, and a host of other ornamental plants.

On the 20th of March 1827, Mr Douglas started from the Columbia for England, by way of Hudson's bay, traversing in his route the rocky mountains, the "Grand Dividing Ridge" of the mighty continent of North America, at the height of 16,000 or 17,000 feet above the level of the sea. At the company's settlements he had the happiness to meet Sir J. Franklin, Dr Richardson, and Mr Drummond, and arrived in England on the 11th of September. About the beginning of October 1829, he again set out, under the patronage, partly of the horticultural society, and partly of the government, for North America, and arrived at the Columbia on the 3d of June 1830. Our limits will not permit us to follow him in his important botanical researches, and in perilous incidents which would have shaken the courage of the most stout-hearted. Suffice it to say, that after having again visited North California, he made an excursion to the Sandwich islands. His death took place at the age of 36, in the island of Hawaii, on the road to Hido, the residence of the missionaries; and the particulars of the sad event are given in a letter from these gentlemen. It would appear that he lost his way; and his body was found in a pit excavated for the purpose of entrapping wild cattle, and into which a bullock had previously fallen. The face was covered with dirt; the hair filled with blood and dust, the head dreadfully cut, and the limbs mangled and bruised. It was naturally concluded, and the conclusion was confirmed by medical gentlemen who inspected the body, that his death was caused by wounds inflicted on him by the captured bullock.

DOURO, a river of the Peninsula, called Rio Douro, or Golden River, probably from the quantity of gold dust found in former times among its sands. The Douro rises in the province of Soria in Spain, in a chain of mountains near the village of Almarza, in the kingdom of old Castile; the city of Soria, the capital of the province, is watered by it; Valladolid, Toro, and Zamora, are also on its banks. A few leagues from the last-mentioned place, it changes its course from a westerly to a southern one; and from the village of Miranda becomes a boundary between Spain and Portugal, for the distance of sixty miles. When above Sobradilla, it resumes its westerly course, and falls into the sea at Oporto. The lightness of the soil and the extreme velocity of this river have created an immense bar at its mouth; and the opposition of the current of the ocean, which is also very strong, causes a surf of so dangerous a character as frequently to delay ships from entering the harbour for five or six weeks together. For any species of navigation except that of the wine boats from the interior, the Douro is of no use beyond the city of Oporto.

The *Passage of the Douro*, in 1809, was one of the most brilliant achievements of the British army during the Peninsular war. The French, in their retreat to Oporto, had broke down the bridge. All the boats and barges in the river were secured on the Oporto side, and guards were stationed at the most convenient points; all the artillery and baggage remaining in Oporto, were sent off along the intended line of retreat, and Soult himself proposed to stay only two days, thinking that with a river like the Douro in his front, he was safe from attack from the British for that short space of time. The Douro is more than 300 yards wide at Oporto, and its banks on either side are steep and rocky. Just before it enters the city, it sweeps round the base of a lofty height on the south bank, which is crowned by the buildings and gardens of the convent of S. Agostinho da Serra, and which completely screens the city from all view of the upper part of the river. Beneath the shelter of this hill the whole of the British force was assembled in one mass. Sir Arthur Wellesley mounted to the summit, and scanned every object on the bank occupied by the enemy. Few French troops were to be seen, and there was every indication of the enemy's approaching departure. Sir Arthur felt that he must be quick, or the prize would escape him, yet how to pass the river was the question. A large unfinished building, standing alone, and surrounded by a high stone wall, running down to the water's edge, soon fixed his attention, as affording a good position for those who should land first, until they could be supported; here then he resolved to cross.

"A boat," says colonel Napier, "was soon obtained; for a poor barber of Oporto, evading the French patroles, had, during the night, come over the water in a small skiff. This being discovered by colonel Waters, a staff-officer of a quick and daring temper, he and the barber, and the prior of Amarante, who gallantly offered his aid, crossed the river, and, in half an hour, returned, unperceived, with three or four large barges. Meanwhile eighteen or twenty pieces of artillery were got up to the convent of Serra; and major-general John Murray, with the German brigade, some squadrons of the 14th dragoons, and two guns, reached the Barca de Avintas, three miles higher up the river, his orders being to search for boats, and to effect a passage there also, if possible. Some of the British troops were now sent towards Avintas, to support Murray while others came cautiously forward to the brink of the river. It was ten o'clock; the enemy were tranquil and unsuspicious; and an officer reported to Sir Arthur Wellesley, that one boat was brought up to the point of passage;—"*Well, let the men cross,*" was the reply; and, upon this simple order, an officer and twenty-five soldiers, of the Buffs, entered the vessel, and, in a quarter of an hour, were in the midst of the French army. The building was thus gained without any alarm being given, and every thing was still quiet in Oporto; not a movement was to be seen; not a hostile sound was to be heard: a second boat followed the first, and then a third passed a little higher up the river; but scarcely had the men from the last landed, when a tumultuous noise of drums and shouts arose in the city; confused masses of the enemy were seen hurrying forth in all directions, and throwing out clouds of skirmishers, who came furiously down upon the building. The citizens were seen making signals from their houses, and the British troops instantly crowded to the bank of the river. The troops in the unfinished building maintained their ground; the Douro was quickly covered with boats, which the exulting citizens eagerly brought; and as Murray's troops were seen descending the right bank from Avintas, a loud shout in the town, and the waving of handkerchiefs from all the windows, gave notice that the enemy had abandoned the lower part of the city. The French hastily retreated, and as they passed along by the seminary wall, a deadly fire of musketry from within, tore open terrible gaps in their confused and massy columns. In the meanwhile Sherbrooke's men had crossed the river into the town, and hastening up the steep streets with 'blessings breathed upon them, and shouts of triumphant gratulation and convulsive laughter, mingled with the tears and prayers that greeted them,' came upon the enemy's rear, just as the drivers of five pieces of French artillery had pulled up hesitatingly, appalled by the line of musketry which they had to pass;—a volley from the British stretched most of the artillerymen on the ground, and the rest abandoned their guns. The British were now in complete possession of the town, and the enemy fleeing in all directions."

DOVEDALE; a vale or glen in Derbyshire, remarkable for its romantic beauty. The most frequented entrance to this highly picturesque glen, is about a mile from the road leading from Ashbourne, (a pleasant town in the immediate vicinity,) to Buxton, near the remarkable detached cone-shaped hill, called Thorpe Cloud, which forms quite a "landmark" to a wide district. The descent towards the dale is through a wild and narrow chasm, one side of which is composed of naked beetling rocks, rising to a vast height, whilst the other presents a striking contrast of bushy precipices and green herbage. The dale takes its name from the Dove, a torrent stream, which rises from a lofty hill, called Axedge, near Buxton, from which spring four rivers, that run in opposite directions. Proceeding in a southerly direction, it hurries through Dovedale, filling the glen with its melody. The length of Dove-dale is nearly three miles, and it is in no part more than a quarter of a mile wide, while in some places it almost closes, scarcely leaving room for the passage of its narrow river. On the right, or Derbyshire side of the dale, the rocks are more bare of vegetation than on the opposite or Staffordshire side, where they are thickly covered with a fine hanging wood of various trees and odoriferous shrubs and plants. The frequent changes in the motion and appearance of the transparent Dove, which is interspersed with small islands and little waterfalls, contribute to diversify the scenery of this charming spot; while the rugged, dissimilar, and frequently grotesque and fanciful appearance of the rocks, gives to it that peculiar character by which it is distinguished from every other in the kingdom.

DOVER, Lord. George James Welbore Agar Ellis, afterwards lord Dover, was born on the 14th of January, 1797. He was the son of lord Clifden by Lady Caroline Spenser. He completed his education at Christ Church, Oxford; where, at his examination, in 1816, he was placed in the second class, and took the degree of M. A., April 21st, 1819. At the general election, in 1818, he was returned for the borough of Heytesbury; and thus, at the age of twenty-one, took his seat in the House of Commons. In the parliament of 1820 he sat for Seaford; in that of 1826 for Ludgershall; and in that of 1830 for Oakhampton. During the whole of this period he distinguished himself as an active member of the legislature; seldom, indeed, taking a very conspicuous part in debates upon great political questions: but, while he maintained his principles upon these, in a way not to be misunderstood, applying himself with more congenial and prominent zeal to every subject which involved the cause of learning, the fine or useful arts, charities, and the improvement of the people. Thus, in 1824, when the sum of £57,000 was appropriated to the purchase of Mr Angerstein's pictures, as the foundation of a national gallery, Mr Agar Ellis was the first person who suggested this illustrious design, and one of the most earnest and enlightened of its advocates, whose energy conduced to the accomplishment of the measure. On the formation of the administration, in November, 1830, he was selected by earl Grey to succeed viscount Lowther as chief commissioner of woods and forests. This office, however, he resigned only two months after, on account of his delicate health.

Reverting to his patronage of the fine arts, lord Dover was the steady and generous friend of our native school. One of his first purchases was the magnificent picture of the Queen's Trial, by Hayter, so interesting and valuable for the large number of portraits it contains. The works of Lawrence, Collins, Jackson, Leslie, Newton, and other eminent contemporaries, were added to the treasures of his collection. In 1822, he prepared a "Catalogue Raisonné of the principal Pictures in Flanders and Holland," which was printed, but not published. Lord Dover's literary studies were chiefly directed to the investigation of history, particularly that of his own country. His first published production was "The true History of the State Prisoner, commonly called the 'Iron Mask,' extracted from Documents in the French Archives." Following M. Delort, he demonstrated that mysterious personage to have been count Hercules Anthony Matthioli, secretary of state to Charles the third duke of Mantua. In 1828, he published "Historical Inquiries respecting the Character of Edward Hyde, Earl of Clarendon, Lord Chancellor of England;" in which he adopted that view of the distinguished personage in question, which puts his personal qualities in strong opposition to his excellence as an historian, and places his moral character, like that of lord Bacon, far below his great talents. It was remarkable that his opinion of lord Clarendon's character was seconded, shortly after, by the late earl of Ashburnham's exposition of the conduct of Hyde towards his ancestor, the Jack Ashburnham of the unfortunate Charles I. In 1829, lord Dover edited, in two octavo volumes, "The Ellis Correspondence," consisting of letters written between January, 1666, and December, 1688, by various persons to his ancestor, Mr John Ellis, who was secretary of the revenue at Dublin; and illustrative of the same period as the diaries of Evelyn and Pepys. In 1831, he published a Life of Frederick the Great, King of Prussia, in two vols. 8vo. His last literary task was that of editing the Letters of Horace Walpole to Sir Horace Mann. A small volume of Lives of the most eminent Sovereigns of modern Europe, written for the instruction of his son, was published after his death. Besides these works, he was the writer of some able articles in both the Quarterly and Edinburgh Reviews, as well as in the Annuals, Magazines, and other periodicals.

In 1832, on the resignation of the bishop of Salisbury, lord Dover was elected president of the royal society of literature; of which, nearly from its foundation, he had been an active friend, and a diligent member of the council. By way of an anniversary address, his lordship prepared for the society an historical memoir; the subject of that for 1832 was the death of King Richard II.: and of that for 1833 the Gowrie Conspiracy. The latter he did not read in person, his health being then so impaired as to prevent his attendance.

Lord Dover received his title of peerage by patent, dated June 16th, 1831. He married, March 7th, 1822, lady Georgiana Howard, second daughter of the earl of Carlisle, and sister to the present duchess of Sutherland, lady Cavendish, &c. His death took place at Dover House, Whitehall, on the 10th of July, 1833. He left three sons and three daughters.

DRAKE, Nathan, M. D., an honorary associate of the royal society of literature, &c. was born in York, on the 15th Jan. 1766. He graduated at Edinburgh in 1789; and after a short residence at Billericay in Essex, and at Sudbury in Suffolk, finally settled as a physician at Hadleigh in the latter county, in 1792, where he practised forty-four years. In 1807 Dr Drake married Miss Rose of Brettenham in Suffolk, by whom he had several children.

The walk of literature adopted by Dr Drake was that of light essays, and ingenious illustrations of our standard literature; though his first attempt as an author was a medical treatise, published while he was a resident at Edinburgh. His later contributions to that science consists of papers in different medical periodicals. Of his literary works, by which his name is more generally known, the following is a correct list:—"The Speculator," a periodical paper, written in conjunction with Dr Edward Ash, 8vo. 1790. "Poems," 4to. 1793. "Literary Hours," first edition, 1 vol. 8vo. 1798. 4th edition, 3 vols. 8vo. 1820. "Essays illustrative of the Tatler, Spectator, and Guardian," 3 vols. 8vo. 1805; second edition, 1812. "Essays illustrative of the Rambler, Adventurer, Idler, and other periodical papers, to the year 1809," 2 vols. 8vo. 1809. "The Gleaner, a Series of Periodical Essays, selected from authors not included in the British Essayists,' 4 vols. 8vo. 1811. "Shakespeare and his Times, including the Biography of that Poet; Criticisms on his Genius; a new Chronology of his Plays; a Disquisition on the object of his Sonnets; and a History of the Manners, Customs, and Amusements, Superstitions, Poetry, and elegant Literature of his age," 1817, 2 vols. 4to. "Winter Nights," 2 vols. 8vo. 1820. "Evenings in Autumn; a series of Essays, narrative and miscellaneous," 1822, 2 vols. 8vo. "Noontide Leisure," 2 vols. 8vo. 1824. "Mornings in Spring," 2 vols. 8vo. 1828. "Memorials of Shakspeare," 1828. In addition to the above, Dr Drake left a MS. ready for the press:—"A selected Version of the Psalms, with copious Notes and Illustrations." The papers illustrative of our periodical essayists are at once amusing and interesting, from the variety of information they afford touching that popular department of our national literature; and the "History of Shakspeare and his Times" throws much light on the manners, customs, and amusements, superstitions, poetry, and elegant literature of that age. The papers contained in the last eight volumes of Essays, from the "Winter Nights" to the "Mornings in Spring," inclusive, are of a very miscellaneous character,—critical, narrative, biographical, and descriptive. They are pleasing and elegant in their style, and evince no inconsiderable delicacy and discrimination of taste, unvarying kindness of heart, and purity of moral feeling. Their most striking characteristics are, perhaps, grace and amenity, rather than force or originality. The amiable character of their author is, in fact, impressed on all his productions; and in that character, as developed and displayed in his writings, exists their greatest charm. In his criticism Dr Drake seemed only to look at what was beautiful or pleasing, and in his intercourse with his fellow creatures his candour and charity were equally conspicuous. It may indeed be said of him with perfect truth, that in a professional and literary career of near half a century, amid all the turmoils of party strife and contentious rivalry, he so "pursued the even tenor of his way," as never to have lost by estrangement a single friend, or made one enemy. As a medical practitioner he was deservedly respected and esteemed by his professional brethren for his courtesy and skill, and yet more endeared to all whom he attended by the urbanity of his manners and the unaffected kindness of his heart. Dr Drake died at Hadleigh, in Suffolk, June 7, 1836.

DREW, Samuel, A. M., late editor of the "Imperial Magazine," was born of humble parents on the 3d of March, 1765, in an obscure cottage in the parish of St Austell, in the county of Cornwall. When rather more than ten years old, his father bound him an apprentice to a shoemaker, in the adjoining parish of St Blazey. The treatment he received while an apprentice being such as his disposition could not brook, he left his master when about seventeen, and refused to return. His father compounded for the residue of the term, and procured him employment, and further instruction in his business, at Millbrook, near Plymouth, in which place and neighbourhood he continued about three years. At the close of the year 1784, or commencement of 1785, when about twenty years of age, he came to St Austell, to conduct the shoe-making business for a person who was occasionally a book-binder. With this employer he remained above three years; and then commenced business in that town on his own account.

In the year 1784-5, the late Dr (then Mr) Adam Clarke was appointed to the East Cornwall circuit, of which St Austell was the central station, and the residence of the preachers. The preaching of Mr Clarke and his colleagues aroused Mr Drew's attention to the subject of personal religion; and his abilities being appreciated by Mr Clarke and his coadjutors, they were soon called into exercise; for, within a brief period, he was appointed to the charge of a class, and employed as a local preacher. In this field (except as a class-leader, which office he resigned into other hands) he continued to labour until a few months before his decease.

In April, 1791, Mr Drew married, being then in a creditable way of business. He was not yet an author, but had obtained a name for skill and integrity as a tradesman, and was held in respect by his neighbours. In 1799, he published Remarks on Paine's "Age of Reason," which first brought him before the public as an author. The Remarks having been several years out of print, were republished, in duodecimo, with the author's corrections and additions, in 1820. In 1802, he published an "Essay on the Immateriality and Immortality of the Soul," which brought him into honourable notice beyond his native country. This book was dedicated to the Rev. John Whitaker, whose patronage had, in a great measure, drawn him forth from obscurity. A copy of the work reaching Bristol soon after its appearance, Mr Richard Edwards, then a bookseller there, wished to possess the copyright. It was sold to him for a very trifling sum; nor did Mr Drew ever express regret at the apparently unprofitable bargain. This copyright he lived to redeem, and again to dispose of, with his latest emendations, to Messrs Fisher, Son, and Jackson, of London, by whom the fifth English edition has recently been published. The work has gone through several editions in America, and has been translated into French, and published in France.

The favourable reception which had been given to the Essay on the Soul, prompted the author to further mental exertion. His thoughts, by a natural process, passed from a consideration of the Soul to that of the Body; and a determination to investigate the evidences of a General Resurrection was the result. From this investigation, the subject of Personal Identity was inseparable; and on these topics he recorded his thoughts till the end of 1805. At this time, he took a survey of his work, but was so much dissatisfied with it, that he threw the whole aside as useless and half resolved to touch it no more; nor did it appear in print till 1809. It was then, like the Essay on the Soul, published by subscription, and the copyright sold to Mr Edwards. A second edition of this treatise appeared in 1822.

In May, 1805, he entered into an engagement with the late Dr Thomas Coke, which wholly detached him from the pursuits of trade. Hitherto literature had been the employment of his leisure hours. From this time, it became his occupation. About two years previously to this, he had undertaken, in a course of familiar lectures, to instruct a class of young persons and adults in English grammar and composition. A similar course of lectures, with the addition of physical geography and astronomy, was delivered by him in 1811. In 1820, he published a "Treatise on the Being and Attributes of God," in two vols. 8vo. This performance, which he himself considered as by far his best, obtained for him additional reputation;

and, in connection with his preceding essays, it procured him the distinction of M. A. from the university of Aberdeen. Previously to the publication of this "Treatise," Mr Drew appeared as the biographer of his friend Dr Coke. This life was published by the Methodist Book-room, in 1816, in an octavo volume; and before its appearance, he had undertaken the compilation of a history of his native county, in two quarto volumes. This was not a work of his own suggestion, or one in which he had any personal interest beyond his literary reputation. It was the speculation of a provincial bookseller, who had already published a prospectus of the work, as coming from another pen. The gentleman who had engaged to be the compiler died ere he had got beyond the dedication; and Mr Drew, as his successor, found himself thrown entirely upon his own resources. This work occupied his attention during the greater part of two years; but the publisher becoming bankrupt before its completion, Mr Drew suffered a heavy pecuniary loss; and the public had to wait till 1824 before the concluding portion made its appearance from the press. In the beginning of 1819, when Messrs Nuttal, Fisher, and Co. of Liverpool, were about to establish the "Imperial Magazine," Mr Drew, at the recommendation of Dr Clarke, was engaged as its editor. This led to his removal from St Austell to Liverpool, and from thence to London, where he continued to discharge the duties of his responsible situation until the beginning of March, 1833. Besides the editorship of the "Imperial Magazine," Mr Drew had the superintendence of all the works issued from the Caxton press; and the proprietors of that establishment bear honourable testimony to his abilities, his industry, and his moral worth. He died on the 29th March, 1833.

DROITWICH; a borough town in the county of Worcester, six miles from Worcester, and 118 from London. It has from a very early period been famed for its salt springs or *wiches*. The brine pits are in the midst of the town, which stands on the side of a narrow valley, at the bottom of which runs the small river Salwarp. The prevailing rock around Droitwich is a fine grained calcareo-argillaceous sand-stone, of a brownish red colour, with occasional spots and patches of a greenish blue; and the rock-salt and brine-springs of Cheshire appear to be situated in strata of a similar nature. Before the year 1725, the usual depth of the pits was about thirty feet, but at that period an enterprising speculator resolved to try the effect of boring to a much greater depth, and after perforating a bed of gypsum of considerable thickness the workmen found a copious salt-spring strongly impregnated, which suddenly rising, overflowed the mouth of the pit. This discovery occasioned the ruin of the proprietors of the old pits, which were no longer worth working. The pits now open have been sunk from thirty-five to fifty-three feet through the superior strata, and from one hundred to one hundred and fifty feet through the stratum of gypsum, immediately beneath which is a river of brine flowing over a bed of rock-salt. The head of the spring is obviously on higher ground than the outlet, as the brine rises spontaneously to the surface. One ounce of brine contains one hundred and forty grains and a half of muriate of soda (common salt), two grains and a quarter of sulphate of lime (gypsum), two grains and a half of sulphate of soda, and a trace of muriate of magnesia. From Droitwich to the Severn a canal has been constructed, navigable for vessels of sixty tons burthen, by which most of the salt here manufactured is conveyed for sale in different parts of the kingdom, and the barges commonly return laden with coal, of which large quantities are consumed in the salt-works. This borough formerly returned two members to parliament. It now, in conjunction with the several parishes of Dodderhill, Hampton-Lovett, Doverdale, Salwarp, Martin-Hussingtree, Oddingley, Hadsor, Hindlip, Himbleton, Elmbridge, the Moreway end division, and the Broughton division of Hanbury, and the extra-parochial places called Crutch and Westwood park, returns one member. The franchise, formerly confined to twenty-eight, is now enjoyed by about 311. Population in 1831, 2487.

DRYBURGH. The ruins of Dryburgh abbey, now rendered sacred as the resting-place of Sir Walter Scott, are situated in Berwickshire, on the north bank of the Tweed, about four miles from Melrose. In the early part of the sixth century, a monastery is said to have been founded here by St Modan, one of the first preachers of Christianity in Scotland. St Modan was abbot in 522, but it is supposed, that after his death the community was transferred to Melrose, since no subsequent mention is made of the abbey till about the year 1150, when the present structure was founded by Hugh de Morville, constable of Scotland, and lord of Lauderdale, the district in which it is situated.

In 1322, a considerable portion of the abbey was burnt and destroyed by the soldiers under Edward II., in revenge for certain insults offered them by the monks, who imprudently rang the church bells on their departure. King Robert Bruce contributed largely to its restoration, but it is doubtful whether it was afterwards rebuilt either in its original style or magnificence. In 1545, Dryburgh abbey was again plundered and burnt by the English, under the earl of Hertford. At the dissolution in 1587, (at which period the lands and revenues were annexed to the crown,) it was erected into a temporal lordship and peerage, by James IV. of Scotland, who granted the abbey and its demesnes to Henry Erskine, created lord Cardross, the second son of John, earl of Mar, lord high treasurer of Scotland, and Mary, daughter of Esme Stewart, duke of Lennox, the direct ancestor of David Stewart Erskine, earl of Buchan, elder brother of Thomas lord Erskine, lord chancellor, and uncle to the present proprietor, Sir David Erskine.

The ruins are completely overgrown with foliage; evergreens may be seen flourishing amidst the solemn desolation of a roofless apartment; in others, the walls are clothed with ivy to their summits; and on the top of some of the arches, trees of considerable growth have sprung up, which add to the adornment of the venerable edifice. The age of these trees is a certain proof of the antiquity of its destruction. The original design of the abbey was cruciform, divided in the breadth into three parts, by two colonnaded arcades; the transepts and choir have all been short; a part of the north transept which is still standing, is called St Mary's aisle, and is a beautiful specimen of early English Gothic architecture. The fine Norman arch, originally the western doorway, is enriched with ornaments in general use at the period the abbey is said to have been founded; the sculpture is chaste, and unaffected by time, and it may, perhaps, be considered the most striking feature of the ruins. The last resting-place of Sir Walter Scott is a small spot of ground in an area formed by four pillars, in one of the ruined aisles, which belonged to his family. His uncle Robert Scott, and his lady, are, however, the only members of the family who lie interred there. From the limited dimensions of the place, the body of the author of Waverley, has been placed in a direction north and south, instead of in the usual manner, east and west.

DUDLEY; a market-town in the county of Worcester, twenty-six miles N.N.E. from Worcester. It consists of one long street, with a church at each end. It is well built, paved, and lighted with gas. It has considerable manufactures of nails, hardware, and glass, and in the neighbourhood are extensive coal mines and quarries of ironstone and limestone. A canal has been cut from hence that communicates with the Birmingham and Worcester canal, by means of which the trade of this place has been greatly improved. The family of Ward derive the title of earl from this town, which was a borough, and sent members to parliament in the reign of Edward I., but had lost the privilege, until it was renewed by the reform act, 3, William IV. The number of electors is about 800. It is within the jurisdiction of the county magistrates. The market-day is Saturday. Population of town and parish in 1831, 23,043.

DUDLEY, Right Hon. John William Ward, Earl of, of Castle Dudley, county of Stafford, was born August 9, 1781, the only child of William the third viscount, by Julia, second daughter of Godfrey Bosville, of Thorpe and Gunthwaite, in Yorkshire, Esq. His education was remarkably private. He was removed from his father's mansion, in Park Lane, to a small house at Paddington, where he was entrusted to the care of the Rev. Mr James, a fellow of New College, Oxford, and a separate establishment was maintained for his service. The degree of M. A. was conferred upon him at Oxford, at a subsequent period, Jan. 14, 1813. Immediately after his coming of age, he was, at the general election of 1802, elected M. P. for Downton; and he very soon distinguished himself in the House of Commons as a young man of extraordinary talents. A vacancy occurring in the representation of Worcestershire, he accepted the Chiltern Hundreds, Aug. 1, 1803; and was elected without opposition for that county. At the election of 1806, however, lord Lyttleton was returned in his room; but at that of 1807, Mr Ward was chosen for Wareham. In 1812, he was returned for Ilchester. Of the parliament of 1818 he was not a member; in 1820 he was elected for Bossiney; and on the 25th of April, 1823, he succeeded his father in the peerage. On the formation of Mr Canning's administration, lord Dudley and Ward was appointed secretary of state for foreign affairs, and sworn a member of the privy council, April 30, 1827. On the 24th of Sept. in the same year, he was raised to the rank of an Earl by the titles of Earl of Dudley and Viscount Ednam, the latter being the name of an estate which he had recently purchased in Roxburghshire, and the birthplace of the poet Thomson. In May, 1828, he resigned the secretary-ship. Early in 1832, he gave a celebrated *Olla Podrida fête* in Park lane, in honour of Miss Littleton, now Viscountess Newark. He died on the 6th March, 1833.

The earl of Dudley was a man of powerful talents, varied accomplishments, and a most generous disposition; but his manners had always been so much marked by eccentricities, that few were astonished by the unhappy circumstances under which he was withdrawn, about a year before his death, from society. He experienced from that period a succession of paralytic attacks, and sunk latterly into a state of perfect childhood. One of the earliest symptoms of his lordship's malady was that of asserting himself to be married. He is said to have expressed great affection and solicitude for his imaginary countess. We are not aware of any literary production of his lordship that has found its way to the press, except a well-known article in the "Quarterly Review," on the Life and Character of J. Horne Tooke, with whom Lord Dudley had been intimate in his early youth. His parliamentary speeches, and his despatches, while secretary for foreign affairs, under Mr Canning, lord Goderich, and during a brief part of the Wellington administration, were always distinguished by a classical elegance of style. All the earl's titles expired with him, except the barony of Ward; which devolved on the Rev. Humble Ward, rector of Himley, Staffordshire.

DULWICH; (a.) a hamlet in the parish of Camberwell, county of Surrey, four and a half miles S. from London. It is chiefly remarkable for its college, founded in 1619 by Edward Alleyn, a dramatic performer in Shakspeare's time, who endowed it with property which produces at present about £14,000 annually. The college was founded for a master, warden, four fellows (three of whom must be divines, and the fourth an organist,) six poor brethren, as many poor sisters, twelve scholars, six assistants, and thirty out-members. The scholars are received at the ages of from six to eight years, and educated until they attain their fourteenth year, when they are apprenticed; some were formerly educated for the university, which is now discontinued, although, according to the statute, there ought to be four. The master and warden must be of the family of the founder, or in default of persons so qualified, must bear the same surname, or that of Allen. On the decease of the master, the warden succeeds him, and a new warden is chosen by lot from among the candidates properly qualified. The two senior fellows must be masters of arts, and they officiate as preachers; and the juniors, who must be graduates, and in holy orders, act as school-master and usher. The poor brethren and sisters are chosen as vacancies occur, from the out-members, who are taken from the parishes of St Botolph's, Bishopsgate, St Giles's, Cripplegate, and St Saviour's, Southwark, ten from each parish. The buildings of the college, which exhibit what has been termed the Elizabethan style of architecture, were erected from a design of Inigo Jones. The chapel is open to the inhabitants of the village. The altar-piece has a fine painting of the Ascension. At the south end of the college a noble picture-gallery was recently erected, for the reception of a valuable collection of paintings by Italian, Flemish, and English masters, which was left to the college by Sir F. Bourgeois, who died in 1811, bequeathing also the sum of £12,000 to complete the establishment. A free school was founded here in 1741, by the master of the college, and endowed by him with property producing a rental of £200 per annum, for the education of poor children belonging to the hamlet or living within a mile of it. The school-house is a handsome building facing the college. A medicinal spring was discovered here in 17[illegible], besides which there are several others in the neighbourhood.

THE

POPULAR ENCYCLOPEDIA;

BEING A GENERAL DICTIONARY OF

ARTS, SCIENCES, LITERATURE, BIOGRAPHY, HISTORY,

AND

POLITICAL ECONOMY.

REPRINTED FROM THE AMERICAN EDITION OF THE "CONVERSATIONS LEXICON,"

WITH CORRECTIONS AND ADDITIONS,

SO AS TO RENDER IT SUITABLE TO THIS COUNTRY, AND BRING IT DOWN TO THE PRESENT TIME.

WITH

DISSERTATIONS

ON THE RISE AND PROGRESS OF LITERATURE,
BY SIR D. K. SANDFORD, A.M. OXON., D.C.L.

ON THE PROGRESS OF SCIENCE,
BY THOMAS THOMSON, M.D., F.R.S.L. & E., &c. &c.

AND

ON THE PROGRESS OF THE FINE ARTS,
BY ALLAN CUNNINGHAM, ESQ.

VOLUME VII.—PART II.

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18[illegible]

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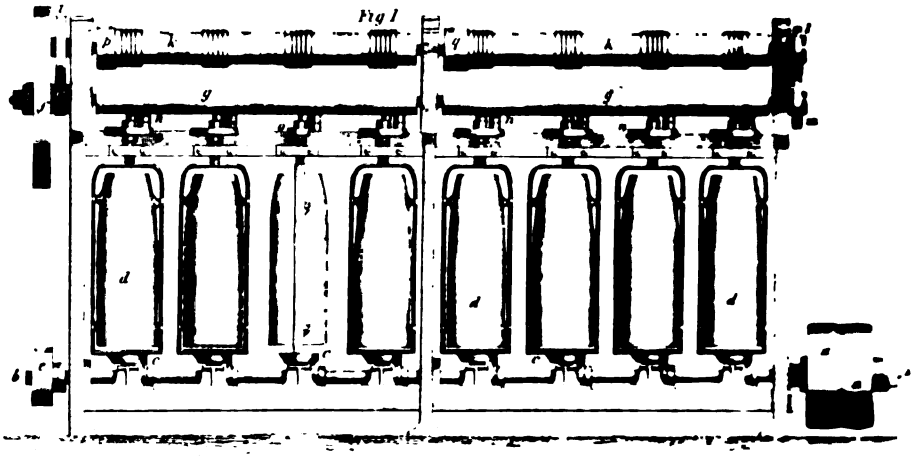
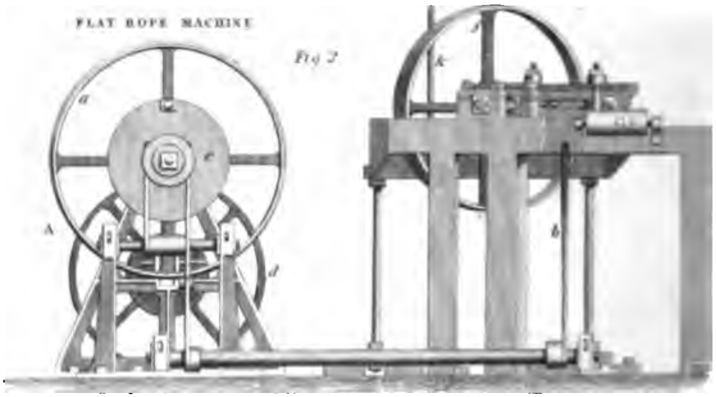
TWISTING MACHINE



FLAT ROPE MACHINE



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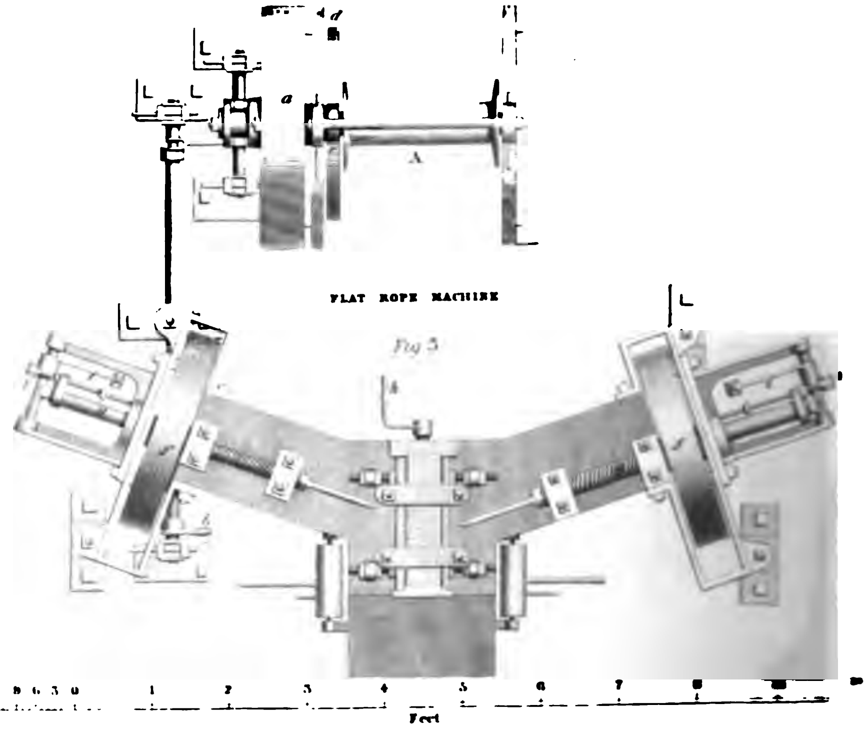
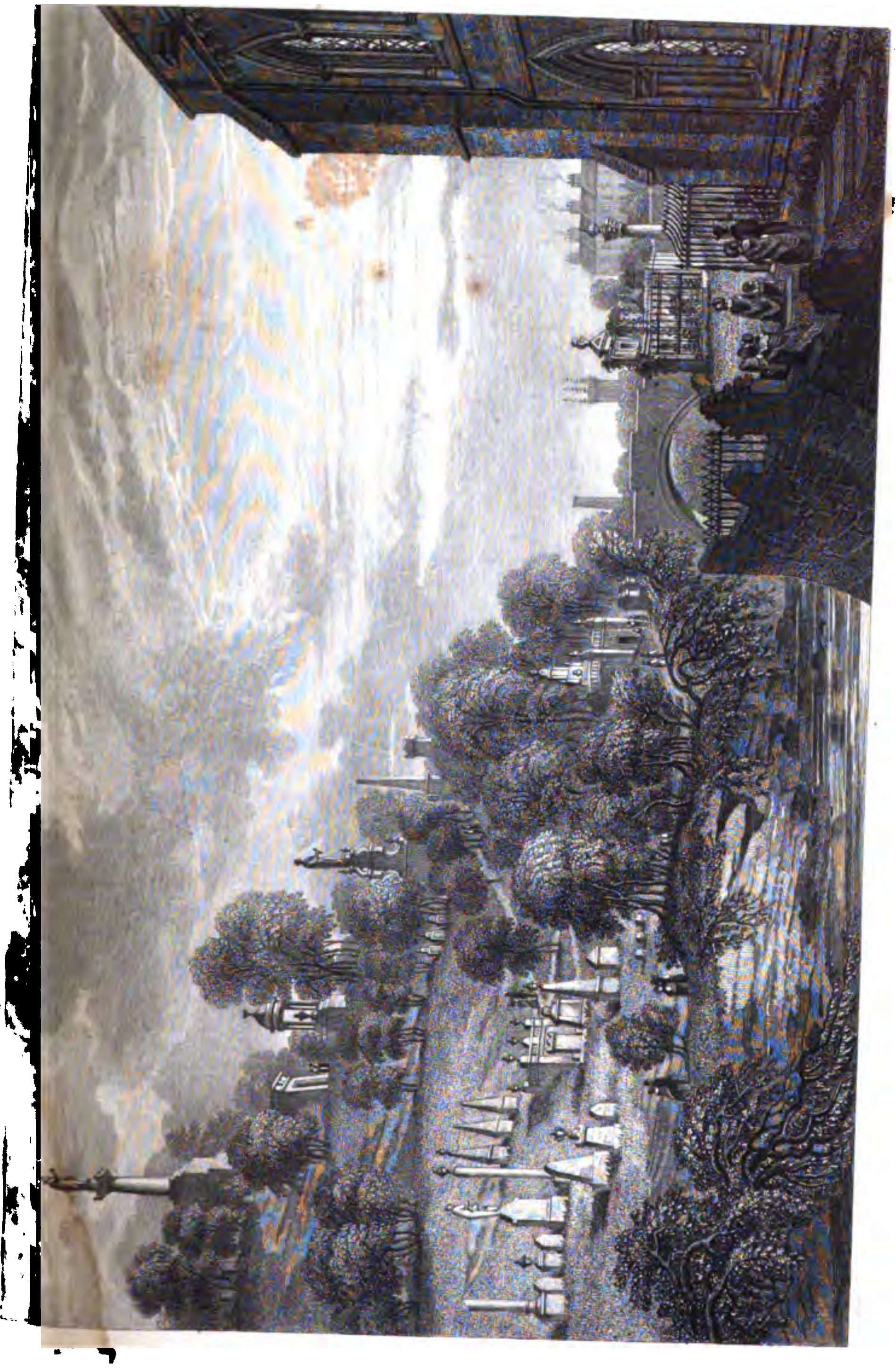


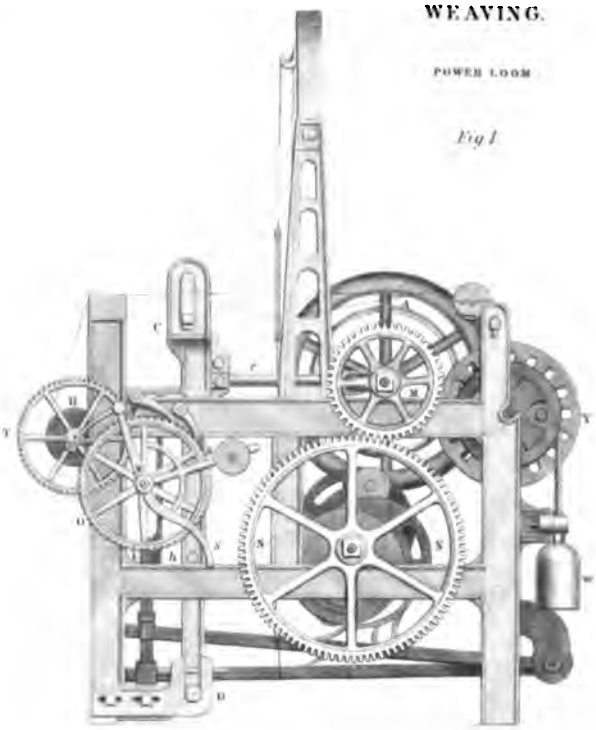
NECROPOLIS. PLATE LXXIII



WEAVING.

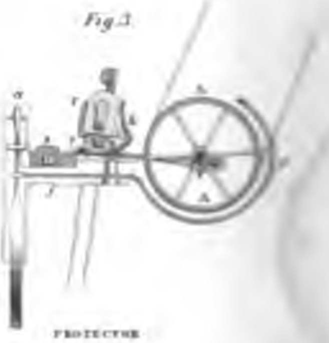
POWER LOOM

Fig. 1.



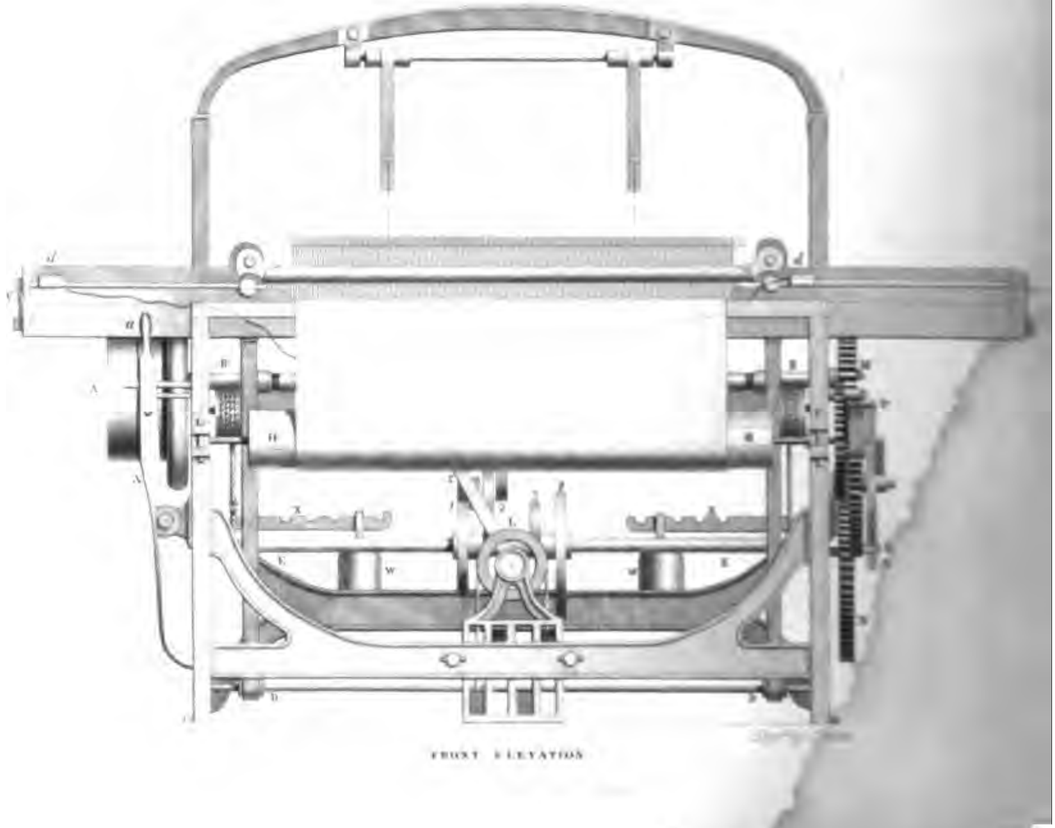
END ELEVATION

Fig. 3.



PROTECTOR

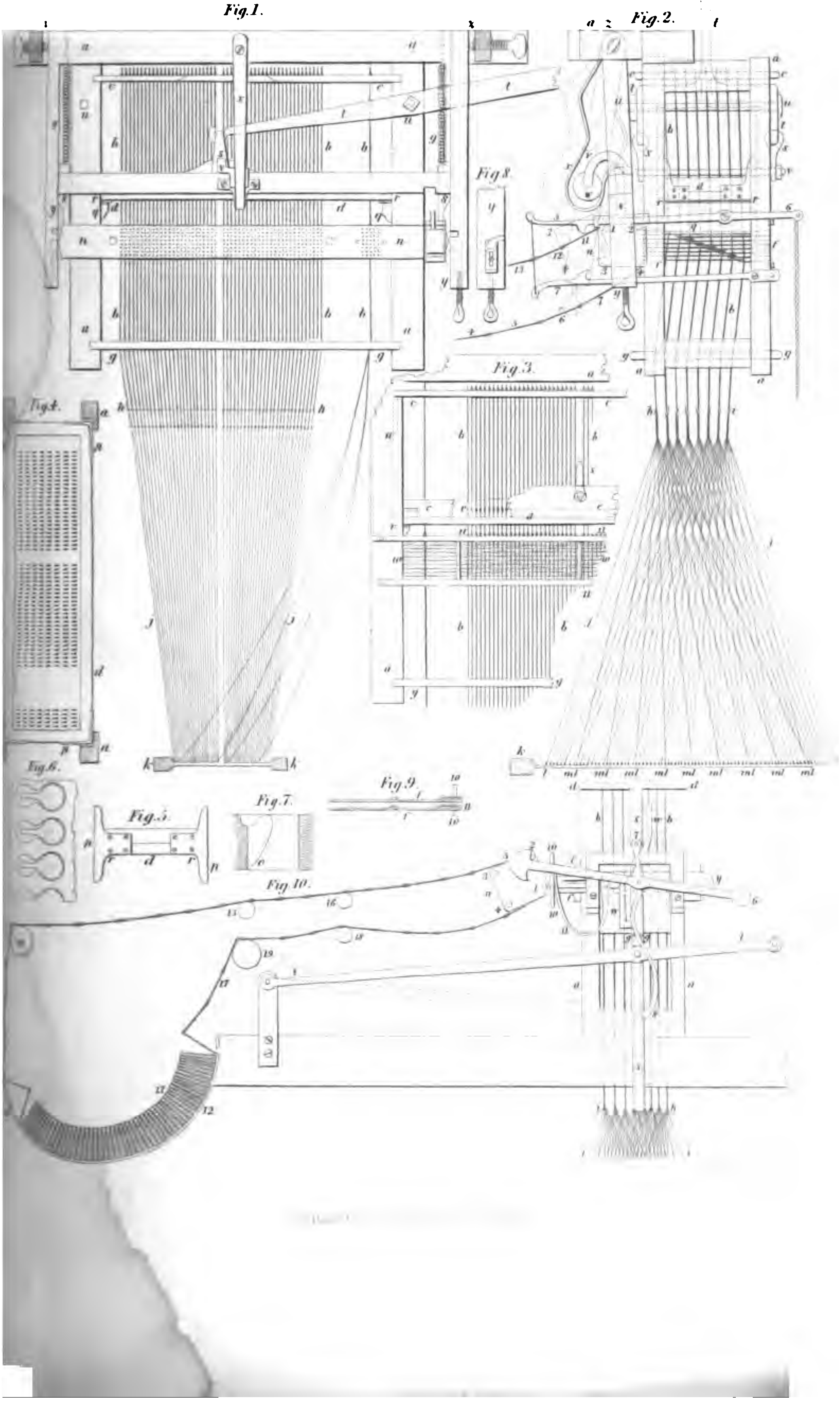
Fig. 2.



FRONT ELEVATION

WEAVING.

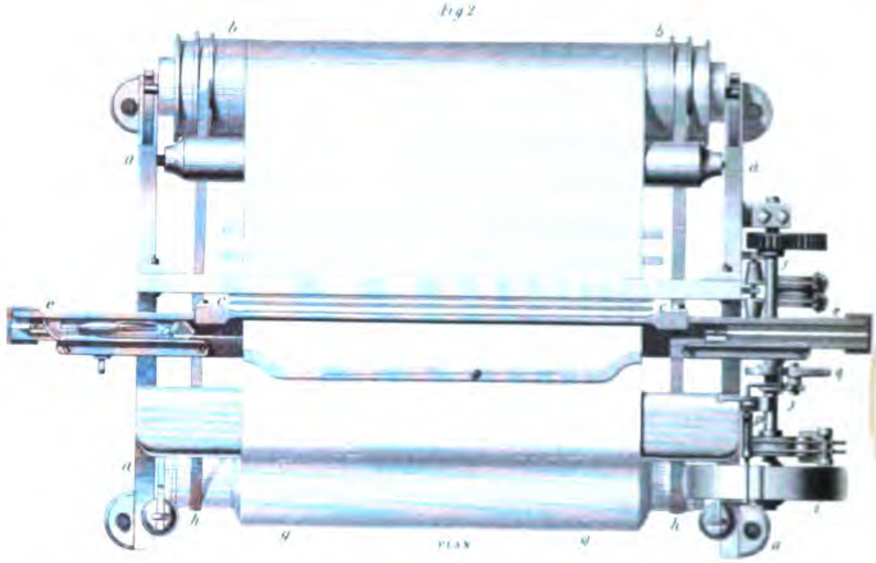
JACQUARD LOOM.



WEAVING

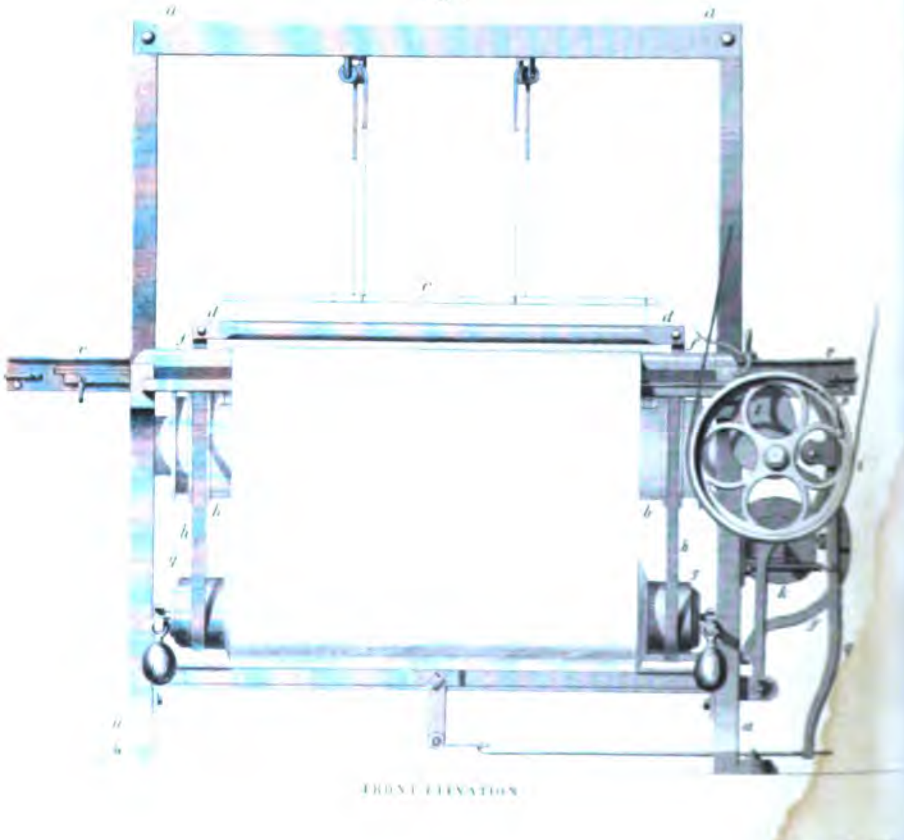
IMPROVED POWER LOOM

Fig 2



PLAN

Fig 1



FRONT ELEVATION

Engraved by [illegible]

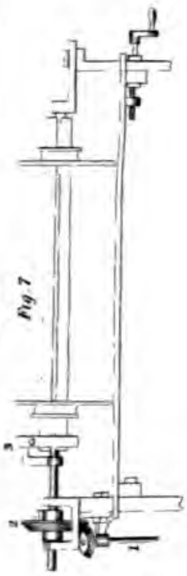


Fig. 7.

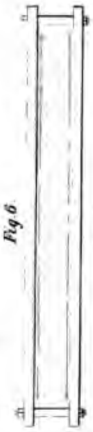


Fig. 6.

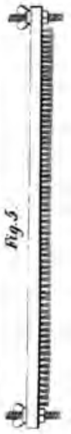


Fig. 5.

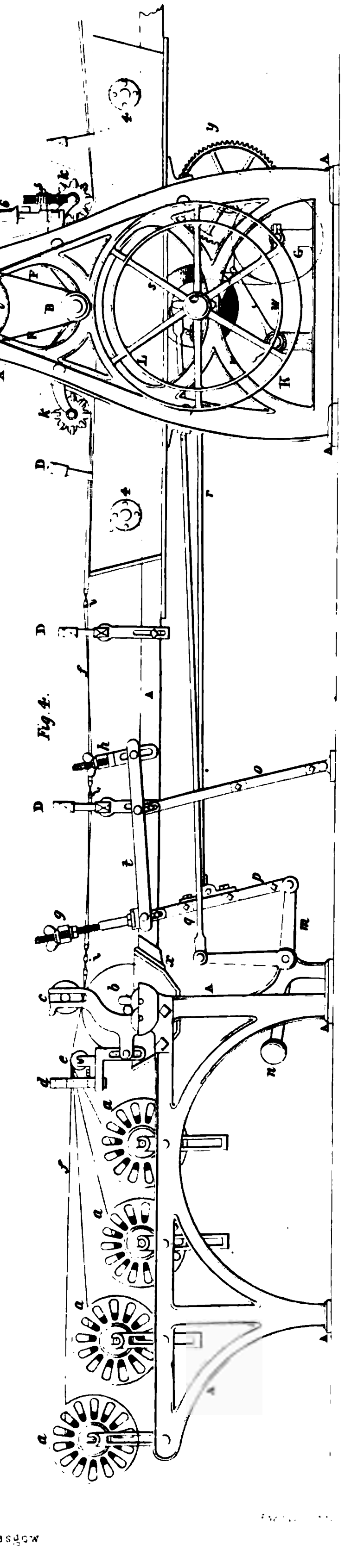


Fig. 4.

DRESSING MACHINE LONGITUDINAL VIEW.

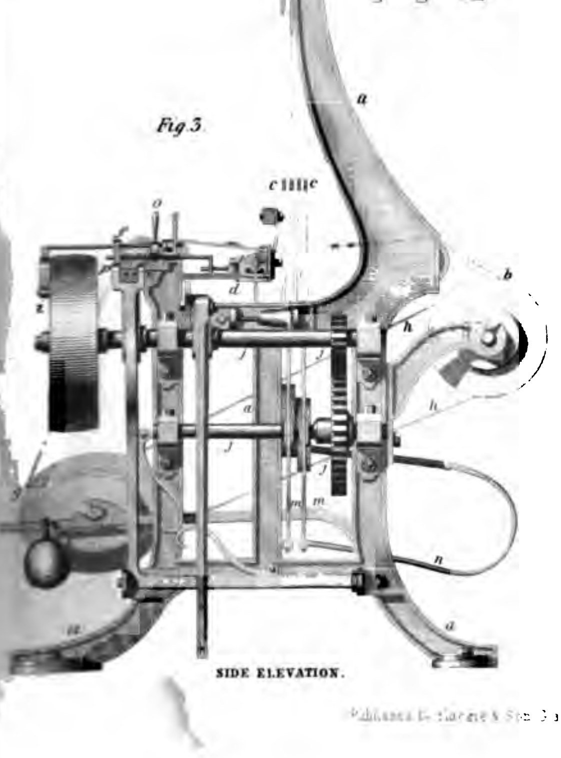


Fig. 3.

SIDE ELEVATION.

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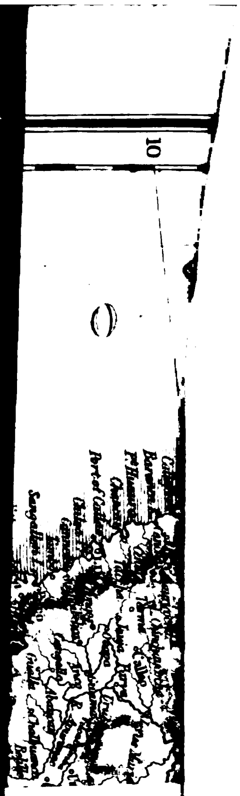
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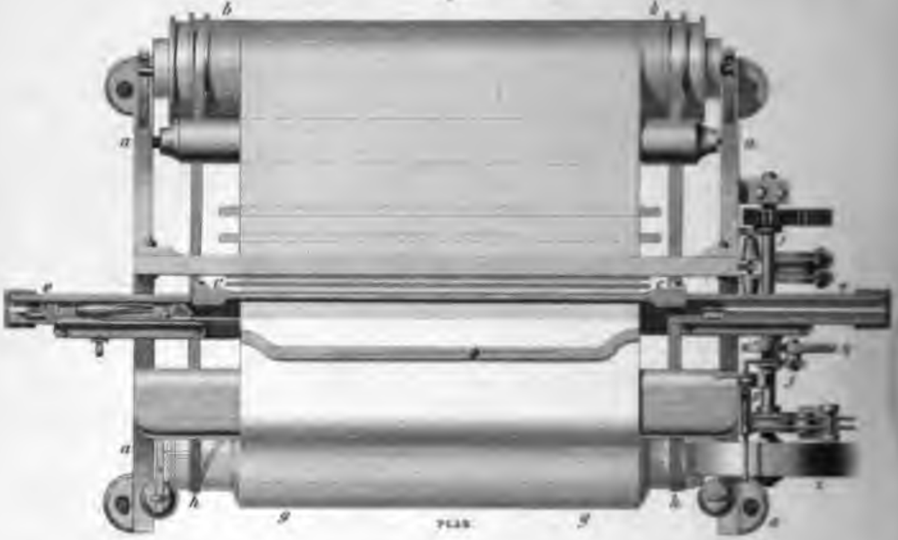
WEAVING

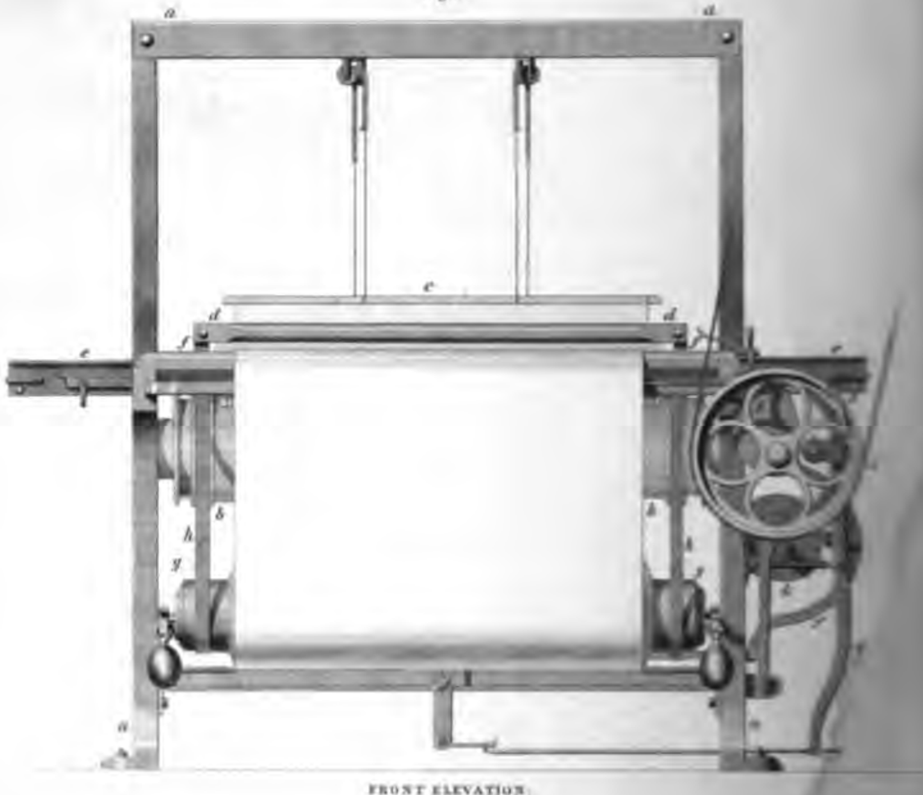
IMPROVED POWER LOOM.

Fig.2.



PLAN.

Fig.1.



FRONT ELEVATION.

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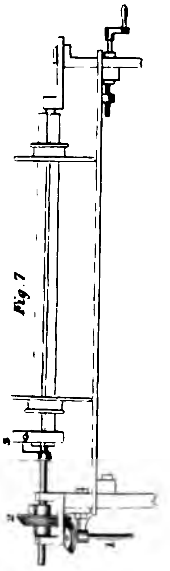

Fig. 7

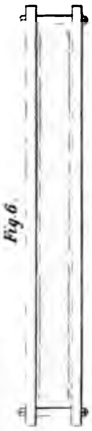

Fig. 6

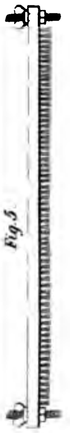

Fig. 5

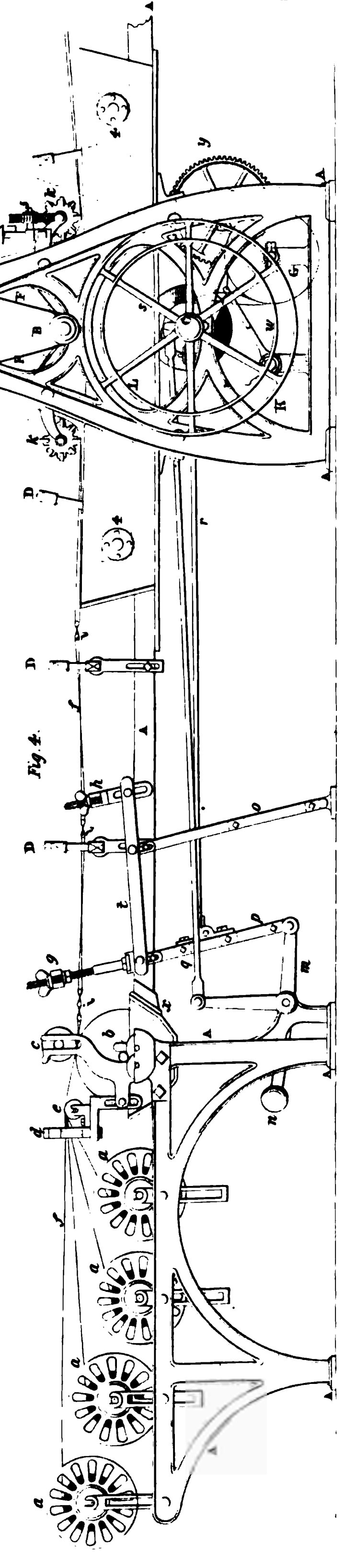

Fig. 4.

DRESSING MACHINE LONGITUDINAL VIEW.

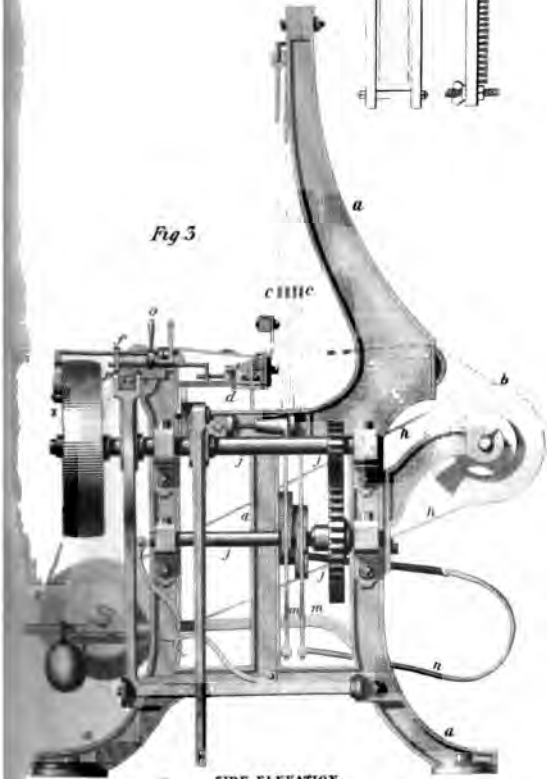

Fig. 3

SIDE ELEVATION.

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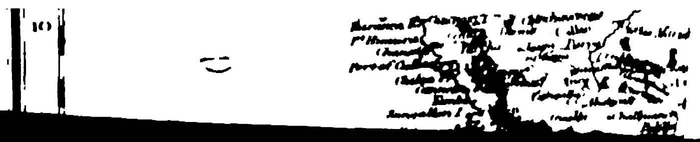
10

DUNDEE, (*a.*) Some of the more recent improvements which have taken place in this thriving town may be here noticed. Reform street, since our former article was written, has been opened up between the High street and the Meadows, and when finished, will embrace a range of street architecture scarcely equalled by any thing of the kind in Scotland. The ancient town-house stands opposite its southern extremity, and the new public seminaries cover its northern termination. This splendid building is in the Doric style of Greek architecture. The portico is composed of eight columns, resembling those of the Parthenon at Athens, but only two-thirds the size. The infusion of a stream of pure air into the very heart of the town is none of the least benefits arising from the construction of Reform street. A fine new street, named Lindsay street after a late provost, has also been opened, along which the line of the Newtyle Railway passes across the Overgate and Nethergate towards the harbour. Immediately adjoining the Railway depôt at the ward, stands the extensive and commodious new gaol and bridewell, on the erection of which about £20,000 has been expended;—the new burying ground, embracing an extent of above four acres, beautifully laid out and embellished with shrubbery, lies to the eastward, and on an eminence to the north the new bleaching green,—the improvements in this quarter comprising the most picturesque approach to the town, and a number of the finest new buildings in or around it. The extension of Union street south to the Craig Pier, the great landing place from the south through Fife, will soon secure a becoming approach to the town from that quarter. But the greatest street improvement in recent times is the opening up of Panmure street between the Cowgate and the Meadows, terminating at the top of Reform street,—thus becoming the great thoroughfare from the eastward, and avoiding the narrow of the Murraygate.

The barbour has long been considered, and stly so, as the noblest specimen of the spirit and nterprise of the inhabitants. Up to May, 1839, less a sum than £447,248 has been expended on e works, which are not yet completed,—being increase of £181,563 during the last six years. wo commodious wet-docks have been finished several years, and the construction of a third, ich is nearly completed, and contains a greater a than any single dock in the kingdom, will afd a greater extent of harbour accommodation n any port in Britain. The newly constructed of railway between Dundee and Arbroath, ich is considered one of the most beautiful yet peration, passes along the northern boundary the docks,—affording, in conjunction with the rtyle and Forfar railways, a cheap and rapid munication with Strathmore. The projected of railway between Dundee and Perth seems e abandoned for the present. Dock street is e course of being extended eastward to Carort, and when completed will exhibit a noble f quay, upwards of a mile in length, uned in the kingdom. Government has lately £9000, besides purchasing ground for the n of a custom house and excise office in street, in a style commensurate with the increasing trade of the port, which will mbrace a direct trade with the East Indies. ition to the capacious graving dock, an ex- patent slip, on Morton's principle, has recently been constructed, capable of taking up the largest merchant vessels, and a powerful crane has been erected at the south of Earl Grey's dock.

Notwithstanding the check which the trade of Dundee, in common with that of other towns, has recently suffered, the imports and exports have been gradually augmenting from 1833 to 1839. An abstract of these for the year ending 1833 shows an increase almost wonderful. Flax and flax codilla imported, 18,777 tons; and hemp and hemp codilla, 3,380; while 515,206 pieces linens, sailcloth, bagging, &c., were exported, measuring upwards of 57¼ millions of yards. But a still greater gradual increase subsequently took place; for in the year ending May, 1839, the importation of flax and flax codilla reached 28,973 tons, hemp and hemp codilla, 3,489 tons; the exportation for the same period being 717,070 pieces linens, sail-cloth, bagging, &c. This affords a striking contrast to the year 1745, when only 74 tons of flax were imported, and 7,000 pieces of linens exported. There has been a corresponding increase in arrivals from foreign ports. During the year ending May 1833, vessels embracing 47,148 tons register arrived, and for the year ending May 1839 the tonnage amounted to 65,220. The shore dues, too, with the exception of a single year, bear out the gradual increase: for the years ending May 1833, to May 1839, both inclusive, the amount collected was progressively as follows:—£9,229, £9,993, £10,935, £12,774, £15,597, £13,262, and £16,004. The shipping belonging to the port has also greatly increased during these six years. At the end of 1833, the tonnage reached 36,473, while its present amount is upwards of 45,000. In 1820 about eighty horse power was employed in Dundee in spinning yarns. The present amount of steam power for spinning and weaving, in and about the town, is estimated at 17,000 horse power. Fully 700 has been erected since the beginning of 1834, but owing to the recent adverse state of trade, more than that amount has been thrown out of employment at present. The population has also increased rapidly within these few years. In 1831, Dundee contained 43,355 inhabitants exclusive of the seamen belonging to the port, and now it contains upwards of 65,000.

Imports and Exports of Dundee for the Year ending 31st May, 1839.

IMPORTS.		
Flax,	21,237	tons.
— Codilla,	7.646	—
Hemp,	2,677	—
— Codilla,	812	—
Lime,	59.377	bolls.
Coals, English,	71.358	—
— Scotch,	86.891	—
Ashes,	1,239	cwts.
Timber,	11.890	loads.
Iron,	8,095	tons.
Tallow,	123	cwts.
Tar.	476	barrels.
Whale Blubber,	783	tons.
— Bone.	900	cwts.,
Wheat,	17.591	qrs.,
Salmon,	4.227	boxes.
EXPORTS.		
Osnaburgs,	79 691	pieces.
Sheetings,	209,236	—
Cotton bagging,	35,164	—
Sundries, do.,	20,462	—
Sailcloth,	159.656	—
Sacking,	115.533	—
Dowlas	75,082	—
Sundries,	22,245	—
Wheat,	818	qrs.
Barley,	14,647	—
Oats,	112	—
Pease,	150	—
Flour,	5	sacks.

Estimated Value of the Principal Articles Imported and Exported at Dundee, during each year, from 1st June, 1835 to 31st May, 1838.

		Year ended 31st May, 1836.			Year ended 31st May, 1837.			Year ended 31st May, 1838.			Total Quantities	Total Value.	Average Quantities	Average Value.	Average Prices.
		Quantity.	Price.	Value.	Quantity.	Price.	Value.	Quantity.	Price.	Value.					
IMPORTS.				£			£			£		£		£	£ s. d.
Flax	tons	16,629	46l.	764,934	22,461	36l.	808,596	13,624	35l.	476,840	52,714	2,050,370	17,571	683,456	39 0 0
—— Codilla	do.	5,393	27l.	145,611	8,279	20l.	165,580	3,784	18l.	68,112	17,456	379,303	5,818	126,434	21 13 4
Hemp	do.	6,213	23l.	142,899	1,768	30l.	53,040	1,490	30l.	44,700	9,471	240,639	3,157	80,213	27 13 4
—— Codilla	do.	1,330	18l.	23,940	1,641	20l.	32,820	811	20l.	16,220	3,782	72,980	1,260	24,326	19 6 8
Lime	bolls	71,680	3s. 6d.	12,544	67,811	3s. 6d.	11,877	52,097	3s. 6d.	9,117	191,588	33,538	63,862	11,179	0 3 6
Coals, English	do.	163,667	4s. 6d.	36,825	308,436	4s.	61,687	281,991	4s.	56,398	754,094	154,910	251,364	51,636	0 4 2
—— Scotch	do.	290,623	4s.	58,125	220,625	4s.	44,125	184,329	4s.	36,866	695,577	139,116	231,859	46,372	0 4 0
Ashes	cwts.	14,787	30s.	22,180	10,047	30s.	15,070	7,153	30s.	10,729	31,987	47,979	10,662	15,993	1 10 0
Timber	loads	13,724	5l.	68,620	11,630	4l. 10s.	52,335	7,253	4l. 10s.	32,638	32,607	153,593	10,869	51,197	4 13 4
Iron	tons	3,984	10l.	39,840	4,244	12l. 10s.	53,050	6,240	12l. 10s.	78,000	14,468	170,890	4,822	56,963	11 13 4
Tallow	cwts.	300	2l.	600	458	38s.	870	217	38s.	412	975	1,882	325	627	1 18 8
Tar	barrels	100	14s.	70	2,438	15s.	1,828	1,000	15s.	750	3,538	2,648	1,179	882	0 14 8
Whale Blubber	tuns	321	20l.	6,420	205	36l.	7,380	197	36l.	7,092	723	20,892	241	6,964	30 13 4
—— Bone	cwts.	336	8l.	2,688	219	11l. 10s.	2,518	203	13l.	2,639	758	7,845	252	2,615	10 16 8
Wheat	qrs.	14,678	2l.	29,356	11,790	2l.	23,580	13,052	2l. 10s.	32,630	39,520	85,566	13,173	28,522	2 3 4
Salmon	boxes	1,660	5l.	8,300	4,160	5l.	20,800	5,188	5l.	25,940	11,008	55,040	3,669	18,346	5 0 0
				1,362,952			1,355,156			899,083		3,617,191		1,205,730	
EXPORTS.				£			£			£		£		£	£ s. d.
Osnaburgs	pieces	106,227	46s.	244,322	66,724	40s.	133,448	72,952	38s.	138,608	245,903	516,378	81,967	172,126	2 1 4
Sheetings	do.	184,327	50s.	460,818	188,386	50s.	470,965	195,375	48s.	468,900	568,088	1,400,683	189,362	466,894	2 9 4
Cotton Bagging	do.	159,494	48s.	382,785	79,649	40s.	159,298	23,216	35s.	40,628	262,359	582,711	87,453	194,237	2 1 0
Sundry ditto	do.	21,841	45s.	49,142	20,193	40s.	40,386	14,576	35s.	25,508	56,610	115,036	18,870	38,345	2 0 0
Sail Cloth	do.	99,805	30s.	149,708	125,496	28s.	175,694	121,004	27s.	163,355	346,305	488,757	115,435	162,919	1 8 4
Sacking	do.	60,369	45s.	135,830	72,126	30s.	108,189	90,903	30s.	136,354	223,398	380,373	74,466	126,791	1 15 0
Dowlas	do.	63,262	60s.	189,786	72,615	45s.	163,384	79,511	42s.	166,973	215,388	520,143	71,796	173,381	2 9 0
Sundries	do.	15,619	50s.	39,048	16,749	40s.	33,498	16,171	40s.	32,342	48,539	104,888	16,179	34,962	2 3 4
Wheat	qrs.	288	37s.	532	788	63s.	2,482	275	61s.	838	1,351	3,853	450	1,284	2 13 8
Barley	do.	32,719	28s.	45,806	24,130	27s. 6d.	33,178	24,220	33s.	39,963	81,069	118,948	27,023	39,649	1 9 6
Oats	do.	427	23s.	491	123	22s. 6d.	138	200	25s.	250	750	879	250	293	1 3 6
Peas	do.	354	28s.	495	25	29s.	36	182	41s.	373	561	904	187	301	1 12 8
Flour	sacks	21	34s.	35	114	50s.	285	40	50s.	100	175	420	58	140	2 4 8
				1,698,800			1,320,982			1,214,194		4,233,977		1,411,325	

DUNDONALD, Earl of. The right hon. Archibald Cochrane, ninth Earl of Dundonald, lord Cochrane of Paisley and Ochiltree, lord Cochrane of Dundonald, and a baronet of Nova Scotia, was born on the 1st Jan. 1748-9. The noble family of which he was the representative took its surname from the barony of Cochrane, in Renfrewshire, where it appears to have been of great antiquity. Although his ancestors did not attain the dignity of the peerage until the reign of Charles I. yet they had been barons of some distinction for many centuries before. William Cochrane, a chieftain who in his time possessed considerable power and renown, left but one child, Elizabeth, who married Alexander Blair (the proper family name at this day); and by him had seven sons. William, the second of these, was created baron Cochrane of Dundonald, in 1647, by Charles I.; and was advanced to the dignity of Earl of Dundonald, in 1669, by Charles II. From his eldest son descended seven Earls of Dundonald; but that branch became extinct in 1758, by the demise of William, a bachelor, who was killed at the capture of cape Breton. The honours and estates then devolved on Thomas, he father of the late peer; he being descended rom John the younger son of the first earl. The ate earl was the second but eldest surviving son f Thomas, by his second wife Jean, eldest daugher of Archibald Stewart, of Torrence, in the ounty of Lanark, Esq.; which lady lived to the ge of eighty-six, and died in 1808. In 1764, his rdship obtained a coronet's commission in the 3d giment of dragoons. He soon, however, quitted e army for the navy, and served as a midshipman nder one of his countrymen, the late captain Stair ouglas, a gallant officer of the old school. He as afterwards stationed on board a vessel on the ast of Guinea as an acting lieutenant. On the deise of his father, which took place on the 27th of ne, 1778, lord Cochrane succeeded to the family tles. He then determined to devote himself enrely to scientific pursuits, with the laudable view improving the manufactures and commerce of country. One of the first inventions published this nobleman was intimately connected with safety of the British navy, the extension of r mercantile speculations, and the advantage of great proprietors of estates in the northern porn of the kingdom. While on the coast of rica, he had perceived that both king's ships and rchant vessels were subject to be worm-eaten in ery short space of time; instances, indeed, hav- occurred in some of the great rivers, in which, the course of a few months, they were declared t to be "sea-worthy." To remedy such an evil ame a particular object of lord Dundonald's dy; and he at last hit upon an expedient which oved to be attended with the most brilliant cess, both in a national and in a profitable point view. It was his lordship's opinion that an exct from coal, in the shape of tar, would prove ctual to the end proposed; and, after a variety trials, it was at length found to answer. By of a final experiment, an application was made he states-general, and a guard-ship stationed at mouth of the Texel had her bottom "payed" h this material. On her return into port, the l, and all the streaks below watermark, were nd to be sound and substantial. A certificate he fact was granted; and a similar trial was e on a decked boat stationed at the Nore, the lt of which was equally satisfactory. As the small or refuse coals were as good as the best for the purpose, warehouses and proper buildings for carrying on the process were erected at Newcastle; and in 1785, his lordship obtained an act of parliament for vesting in him and his assigns, for twenty years, the sole use and property of a method of extracting tar, pitch, essential oils, volatile alkali, mineral acids, salts, and cinders, from pit-coal, throughout his majesty's dominions; for which he had previously procured a patent for the usual short term. The general adoption of copper sheathing, however, rendered the speculation abortive; the use of coal tar was confined to the covering of outhouses, sheds, and fences; and lord Dundonald not only reaped no profit whatever from his invention, but sustained an extensive loss by it. In 1785, his lordship circulated "An Account of the Qualities and Uses of Coal-tar and Coal-varnish;" and in the same year he also published a quarto pamphlet, entitled "The present State of the Manufacture of Salt explained;" in which he recommended the refuse as a manure. In 1795, he published "A Treatise, showing the intimate connection that subsists between Agriculture and Chemistry; addressed to the Cultivators of the Soil, to the Proprietors of the Fens and Mosses in Great Britain and Ireland, and to the Proprietors of West India Estates;" and in 1799, "The Principles of Chemistry applied to the Improvement of the Practice of Agriculture." In 1801, his lordship obtained a patent "for a method of preparing a substitute for gum Senegal and other gums extensively employed in certain branches of manufacture." His preparation was to be formed from lichens, from hemp or flax, and the bark of the willow and lime. In 1803, he received another patent "for methods of preparing hemp and flax, so as materially to aid the operation of the tools called hackles, in the division of the fibre." This plan consisted in steeping or boiling the stalks, in order more effectually to remove the bark before dressing; and, as it was found to lessen the danger of mildew in sail-cloth, it was more generally adopted, although it did not prove more profitable than lord Dundonald's other inventions. His latter years were spent under great pecuniary embarrassments. He was at length relieved from them by death. His decease took place at Paris, on the 1st of July, 1831.

The earl of Dundonald was thrice married: first at Annsfield, October 17, 1774, to Anne, second daughter of captain James Gilchrist, R.N., of that place; and by that lady had one daughter and six sons: 1. The right hon. Thomas, now earl of Dundonald, born in 1775, who from his adventurous spirit has made the name of lord Cochrane familiar in almost every quarter of the world; he married, 1813, Catherine Frances Corbet, daughter of Mr Thomas Barnes, and has several children; 2. Lady Anne, and 3. The hon. James, who both died young; 4. The hon. Basil Cochrane, lieutenant-colonel of the 36th foot, who died May 14, 1816; 5. The hon. William Erskine Cochrane, a major in the army, and late of the 15th regiment of dragoons; 6. The hon. Archibald Cochrane, captain R.N.; 7. The hon. Charles, who died young. The first countess having died at Brompton, November 13, 1784, the earl married, secondly, at London, April 12, 1788, Isabella, widow of John Mayne, of Teffont-Ewias in Wiltshire, Esq., and daughter of Samuel Raymond, of Belchamp hall in Essex; and by her, who died in December, 1808, at the house of her brother, Samuel Raymond, Esq., had no issue; thirdly, in April, 1819, Anna Maria, eldest daughter of Francis Plowden, Esq. LL. D., the Irish historian, who died September 18, 1822, leaving an only child, the hon. Dorothy Cochrane, so named after her maternal grandmother, who was the authoress of an opera entitled "Virginius."

DUNLOH CASTLE, in the county of Kerry, Ireland, the remnant of an ancient fortress, which seems to have been originally erected for the purpose of guarding the river Laune, which is the only outlet of the lakes of Killarney. It stands on the summit of a small conical hill, whose apex has been cut away to afford a more convenient space for building; and its position must have rendered it, until the introduction of cannon into modern warfare, a place of great strength. It suffered considerably in the wars of the earl of Desmond, during the reigns of Henry VIII. and queen Elizabeth; but it was rebuilt about the period of Sir George Carew's administration in Munster. Subsequently, when the forces of the parliament came into this part of Ireland, the castle was again attacked, and a great part of it demolished by a bombardment. The only part of the edifice now standing is a square tower, which constituted but a small portion of the original fabric; this has been converted into a dwelling-house, "which affords more room and convenience than could be expected from the exterior aspect." Owing to the extraordinary thickness of the woods covering the hill upon which the building stands, no part of the lake or of the surrounding country is seen from the area in front of the castle, and even the windows afford but a very confined view; the battlements, however, command a noble prospect of the lake Killarney and of the windings of the river Laune.

The defile, which lies between Tomies Mountains and Macgillicuddy's Reeks, is called the Gap of Dunloh. The entrance is formed by the Holly mountain and the Bull mountain, which are shoots from the two larger masses above mentioned. Amidst the vast mountainous region on the western side of the county of Kerry, there is no scene which exhibits a more varied and sublime combination of the boldest features of uncultivated nature than the Gap of Dunloh.

DUNLUCE; a parish in the county of Antrim, Ireland, containing 3605 inhabitants. It is six miles N.N.E. from Coleraine, and one and a half from the Giant's Causeway. The land is generally fertile and well cultivated. There are extensive limeworks and quarries of basalt within the parish; also a large paper manufactory.

Dunluce castle is a very extensive ruin, situated on a steep rock on the northern coast of the county. The rock on which it stands is completely covered with the buildings, so that the outer walls are flush with the face of the precipice. The rock itself is not surrounded by water, but is connected with the main-land by a stone ridge, a little higher than the surface of the ocean. The entrance to the castle was by means of a bridge, formed in the following manner:—Two parallel walls were thrown across the chasm, about eight feet asunder: upon these, planks were laid crossways for the admission of visiters, and removed again immediately afterwards. At present, one of these walls has fallen, so that the access to the ruins is extremely dangerous, as it can only be effected by walking along the remaining wall, which is but three feet in width, and considerably injured by time. Nothing accurate is known as to the date of its erection. In the fifteenth century, it was in the possession of an English family, named MacWillies, from whom it passed to the MacDonalds of the isles, and it remains the property of their descendants, the earls of Antrim, to the present day. It was the favourite residence of the latter family, till it was destroyed by fire on the 9th April, 1750.

DUNSTABLE; a market-town in the county of Bedford, thirty-three miles from London. It is situated near the Chiltern hills, and consists of four principal streets running nearly in the direction of the four cardinal points. Here is an extensive manufacture of various articles in straw, especially the well-known "Dunstable hats;" here is also one of the largest manufactories for whiting in the kingdom. Dunstable is proverbially famed for its larks, which are of a remakarble large size, and are sent to the London market in great quantities. Population in 1831, 2117.

DUPPA, RICHARD, ESQ. LL. B. barrister-at-law, and F.S. A., in Lincoln's inn. Mr Duppa received his university education at Trinity college, Oxford, and afterwards took the degree of LL. B. at Trinity hall, Cambridge, in the year 1814. He died 11th July, 1831. He was the author of a great variety of works, of which the following is a catalogue:—"A Journal of the most remarkable occurrences that took place at Rome upon the Subversion of the Ecclesiastical Government in 1798," two editions in 1799. "A Selection of Twelve Heads from the Last Judgment of Michael Angelo, 1801," imperial folio. "Heads from the fresco Pictures of Raffaelle in the Vatican, [illegible] folio. "The Life and Literary Works of Michael Angelo Buonarotti, with his Poetry and Letters, 1806." 4to. 2d edit. 1809; 3d edit. 1816. "Elements of Botany, 1809," 3 vols. 8vo. "Virgil's Bucolics, with Notes, 1810." "Selections Greek Sentences, 1811," 24mo. "An edition of Martyn's Eclogues of Virgil, 1813." "On the Author of Junius, 1814." "Introduction to Greek, [illegible] "Observations on the Price of Corn as connected with the Commerce of the Country and the Public Revenue, 1815." "Classes and Orders of the Linnæan System of Botany, illustrated by select Specimens, 1816," 3 vols. 8vo. "Life of Raffaelle, 1816." "Outlines of Michael Angelo's works, with a plan, elevation, and section of St. Peter's, Rome, 1816." "Illustrations of the Lotus of the Ancients, and the Tamara of India, 1816," (only thirty private copies.) "Dr Johnson's Diary of a Journey into North Wales in [illegible] with illustrative Notes, 1816," (incorporated in the late edition of Boswell's Life, by the Rt. hon. J. W. Croker.) "Miscellaneous Observations and Opinions on the Continent, [illegible] "Travels in Italy, &c. 1828." "Travels on the Continent, Sicily, and the Lipari Islands, [illegible] "Maxims, &c. 1830;" and a pamphlet on the claims of authors to their copyright.

E

EAR, (a.) The loss of hearing very often arises from the state of the internal ear or the brain; and in most of such cases, all that science can do is to teach the fact, without furnishing a remedy. Very many of the diseases of the organ of sight, on the contrary, are situated in the eye itself, the brain and optic nerve being unaffected, and not a few of these produce partial or total loss of vision. It fortunately happens that many of these cases are within the reach of art, and by a delicate, though not a very difficult operation, the functions of the eye may be restored. But a small proportion, on the other hand, of those diseases of the ear which erminate in deafness, are situated in the external rgan, and a few only of these are in the present tate of knowledge within our control.

It is probable that the mere loss of hearing is ot so great a privation as the loss of sight; yet e know that the deaf are ordinarily far less cheer- l and happy than the blind. This can perhaps accounted for by the fact, that the loss of hear- g is more frequently in consequence of a diseased te of the brain, than the loss of sight. Another rcumstance also seems to favour this opinion; d that is, that insane persons are very often deaf, hile the sense of sight is rarely affected in them.

Even when deafness is the consequence of some fect in the external organs, it is not very often t it can be removed by any human means, and ll less often by a surgical operation; differing ntially, in this respect, from the diseases of the e.

It is well known that the loss of hearing some- es arises from an obstruction of the Eustachian be, the canal which runs from the back part of the oat to the cavity of the tympanum. Through s canal the air passes from the mouth, the mem- ne of the tympanum is in this way kept tense, d consequently vibrates better when sounds strike n it. The air is occasionally prevented by colds the head, as they are called, and other inflam- tory affections about the throat, from passing ugh this canal, and so long as the passage is structed, the sense of hearing is rendered more less imperfect. In some cases this obstruction ermanent and complete, and in such cases per- nent deafness is the consequence.

rom a knowledge of the fact, that the mem- ne of the tympanum may be ruptured, and the e of hearing remain unimpaired, Sir Astley per was led to suggest and practise an opera- n, in cases of deafness arising from an obstruc- of the Eustachian tube, that for a time pro- ed very favourable results. The operation was y simple; the membrane was merely punctured some small sharp-pointed instrument like a ching-needle. The air was in this way admit- to the cavity of the tympanum, and the tension he membrane thus restored. In some cases, e was for a time great apparent relief from the ation; the patients actually heard better, or ght they did; but the good effects were not found to be permanent, and it is now almost altogether abandoned.

EDGEWORTHSTOWN; a small neat town in the county of Longford, Ireland, fifty-two miles W.N.W. from Dublin. It contains about a thousand inhabitants, and takes its name from its proprietors, the Edgeworth family, whose mansion house is here surrounded by tastefully disposed grounds. As the home of Richard Lovell Edgeworth and his distinguished daughter, this place must always be an object of interest to the lovers of science and literature.

EDMONSTONE, R., an artist of some eminence, was born in Kelso in 1794. He was apprenticed to a watchmaker, but his attachment to painting was so strong that he soon devoted, under many difficulties, his whole time and attention to the study and practice of the art. He brought out his first productions in Edinburgh, where they attracted considerable attention, and procured him the patronage of baron Hume and other gentlemen of taste, whose friendship he afterwards enjoyed. His success soon induced him to settle in London, where he speedily attained an honourable distinction. He afterwards visited the continent, and remained abroad for some years, residing at Rome, Naples, Florence, and Venice, at all of which places he pursued his studies with so much assiduity as materially to injure his health. Among his productions painted at Rome, is the picture of the "Ceremony of Kissing the Chains of St Peter," which was exhibited and sold at the British Gallery in 1833. At Rome, he experienced a severe attack of fever, from the effects of which his constitution never recovered, and which obliged him to relinquish painting for a considerable time. On his return to London, however, at the close of 1832, he again zealously commenced his professional labours, but his health, injured by unremitting application, gave way, and, in the vain hope of deriving benefit from his native air, he left London for Kelso, where he died on the 21st Sept. 1834. As a painter, Mr Edmonstone practised both in portraits and in works of imagination; but it was chiefly in the latter he excelled, and to which his inclination turned so forcibly as to induce him almost totally to resign the other more lucrative branch of his profession. His works are remarkable for the elevated sentiment which he infused into the most simple action or attitude—for a fine tone of colouring—and for that love of tranquil beauty which no doubt originated in the bias of his own mind and feelings. He was extremely fond of children, and of introducing them in his pictures—so much so, that, with one or two exceptions, he may be said never to have painted a picture in which a child did not form a prominent object. Their infantile attitudes, traits, and expressions, were his continual study and delight; and few artists, however celebrated, can be said to have been more true or happy in rendering their artless graces upon canvas.

EDMONTON; a parish in the county of Middlesex, seven miles north from London. The village is situated on the high road from London to Ware and Hertford, and is adorned with many elegant mansions and villas. An extensive trade in timber is carried on here by means of the Lea river navigation. Population in 1831, 8092. The 'Bell of Edmonton' is celebrated in *John Gilpin*.

EDUCATION. It was stated in the public prints, some years since, on the authority of a French writer, whose name, however, is not given, that "the departments in France which are the most enlightened and send the greatest number of children to the schools, do yet produce the greatest number of criminals; and that the most moral of the departments are those which send the fewest children to the schools." In order to judge fairly of these results, provided they are truly stated, it would be necessary to know more than is told us of the precise local condition, population, wealth and moral exposures, of these contrasted departments. But, leaving the questions which these circumstances are so necessary fairly to settle, we have introduced the statement, for the sake of distinctly admitting that mere education, considered without reference to the sort of education, is not enough. We are far from saying, that the social safety and prosperity of any people is to be measured by the number of schools alone. We look with equal solicitude to the character of these schools. Knowledge, simply considered, is nothing but power. And knowledge that is crude and imperfect; that is mechanical, being rather an implement in the hands of the mind, than the culture of the mind itself; or that is speculative, being blended with no moral influences,—such knowledge is a dangerous power. The idea too much prevails, that schools have a kind of talismanic virtue to promote and preserve free institutions. We are every way placing too implicit a reliance upon schools. We should not regret it, if the experiment in this point *had* met with temporary failure in France, provided the lesson were thereby taught, that something more than bare education is necessary to train up a people to that free and happy condition, for which all enlightened nations are seeking.

Popular education, to answer its purpose, must possess a certain, definite character. And the requisites which make up this character of useful and safe popular education, must, as we conceive, be these. It must be *thorough*; it must be *practical*; and it must be *moral* or *religious*.

Thorough, we say, in the first place. We would meet the alarmist, on this subject, in the very outset. We would touch, with a decided hand, the very point of his apprehension. Thorough education, we say, is the only safe education.

Regard the diffusion of knowledge as we will, whether with fear or with favour, this is the only reasonable conclusion to which either way of viewing it can lead us. If the light could have been shut out entirely, the world might have walked in its dark way, with such dangers only as belong to darkness. But the light has broken through all the barriers, whether of jealous power, or of scholastic monopolies; the eyes of men are opened to behold it; and we might as well undertake to bar the gates of the morning, as to keep it out, or to shut again the eyes that have once seen it. Instead, therefore, of setting up temporary and local defences, frail screens, to resist this spread of knowledge, it is better thoroughly to study its laws, fully to understand its nature and its requirements, and as fast as possible to adjust the relations of society and the principles of government to the new condition. A new element has entered into the process of civilization, and mankind must be taught, by the most thorough instruction possible, how to use it. This, we repeat, is the only sound policy on any hypothesis. If popular education be a good thing, if it be the great instrument of human improvement, if the more knowledge we have the more safety there is, then let its aid be welcomed and employed, to the utmost extent. But, even if we regarded it as a wild beast that had broken into the pale of Christendom, and which could neither be driven out nor destroyed, we should think the only policy would be, to tame and to train it to useful purposes.

Whatever opinion, therefore, a man may entertain concerning the tendencies of modern civilization, we cannot think that he properly understands the age in which he lives, if he find nothing to do but to rail against and ridicule it. Grant that there are things enough around us on which to exercise the weapons of wit and sarcasm, such weapons can no more avail to resist the progress of knowledge than would arrows to stop the sun in his course. The cause of education must take its trial; and it requires all the sober judgment there is in every country to bring the trial to a safe and happy issue.

But what we wish especially to maintain is, that this trial is safest, in being thorough. The danger, in fact, lies not in a thorough, but in a superficial education. The alarm, we are aware, of some theorists is, lest the people should know too much; but the just fear, in our apprehension, is that they will know too little. Whether as applied to the social or political relations of man, this seems to us to be true, and the true answer to the common objections against a general system of popular education.

It is objected, for instance, against carrying the education of the poor and labouring classes beyond the simplest rudiments of knowledge, that such a course will make them discontented with their sphere, will unfit them for their situation, will fill their heads with erroneous ideas of their place and duty, will puff them up with pride and arrogance. If increased facilities for improvement should awaken in some a reasonable desire to improve their condition, and should lead a few from the humble walks of life to its highest stations, these are results to which no generous mind, surely, will object. But the *bad* effects alleged, do not arise, as we contend, from thorough, but from superficial education. It is not because men are too much educated, but because they are not enough or not rightly educated, that they become too proud for their employments. Who has not observed that the [illegible] of sensitiveness and discontent, this fear of being degraded by what are called menial tasks, the narrow-minded jealousy of their superiors, is extremely apt to manifest itself in the most ignorant persons? The very thing which such persons want is more knowledge. It is not to be made more ignorant, but to be made more intelligent. Besides, we must again remind the objector, that it is not a question about theory, but a matter of fact that is presented to us. What the people have learned cannot be unlearned. The case of popular knowledge is the case in hand, and we must make the best we can of it. And most clearly and undoubtedly, the best that we can make of [illegible] and imperfect knowledge is to make it more thorough and complete. Give us, we would say, if we were to speak as employers; give us intelligent persons to deal with. Deliver us from testy, suspicious, narrow-minded ignorance. Real knowledge, moreover, is itself a great resource for the mind. It gives more content to the humblest state, than any degree of observance could. It also draws to it a real respect, which is more valuable, and which is felt to be more valuable, than any homage that is ever paid to mere splendour of fortune.

The disposition to disturb the tenure of property, which is so constantly apprehended to prevail in the poorer classes of the community both at home and abroad, is, if it really exist, emphatically the offspring of ignorance. It cannot be the permanent interest of any one to do this wrong; and the desire to do it, therefore, can only spring from the rashest and blindest of impulses. To destroy the frame of society, only to roam lawless through it, for a day, can be the wish but of a fool. Property is valuable only as it is secure. It follows, that he who rationally, who intelligently desires it, must desire its security. Let any one select from the common walks of life, from the undistinguished mass of the community, ten of the best educated, most intelligent and reflecting men he knows, and compare them with ten men, if he can find them, who cannot read; and then let him decide, upon whom he would most rely to resist any popular infatuation, any torrent of numbers that was sweeping all before it; upon whose sobriety, consideration and calmness, he would most rely in any great and perilous national crisis.

The next requisite in a sound and wholesome popular education, which we have mentioned, is that it be practical.

By *practical* education we do not mean, merely or chiefly, that which is to be employed upon machinery, or upon the improvement of soils, or upon any other physical improvements, highly valuable and important as all these applications of knowledge undoubtedly are. It is that education which bears upon the machinery of the human mind, which is most truly practical,—that which breaks up "the fallow ground" of the human heart,—that which brings forth the fruits of intelligence and virtue.

Now we must be permitted to doubt whether this great, and ultimate, and truly practical end of all education is distinctly and sufficiently kept in view. Is it common, we are tempted to ask,—we know that there are instances,—but is it common for the teacher of our youth, when entering upon the discharge of his duties, to say with himself,—"*now*, my business is to do what is in my power to rear up for society intelligent and virtuous men and women;—it is not merely to make good arithmeticians or grammarians, good readers or writers, good scholars who shall do themselves and me credit at an examination,—this, indeed I have to do;—but it is still farther, to make good members of society, good parents and children, good friends and associates; to make the community around me wiser and happier for my living in it:—my labour, in fine, must be, to engraft upon these youthful minds that love of knowledge and virtue, without which they cannot be happy, nor useful, nor fitted for the greatest duties, and without which, indeed, all their acquisitions will soon drop like untimely blossoms from the tree of life?"

The blossoms, indeed,—to carry out the figure,—must fall; but that they may not be untimely, that they may produce fruit, there must be formed within them a germ. That germ in the human mind is the love of knowledge, is the intellectual habit that will lead to further acquisitions. Without this, education, and that which is often called the most finished education, is to little purpose. The actual knowledge acquired in our schools must necessarily, the most of it, pass away from the memory. The largest proportion of those who have studied in our colleges, after the lapse of ten or twenty years, know very little of Greek or Latin, of the mathematics or the natural sciences; and if they have gained from their studies no habits of thought, of discrimination, of research, the time and expense of their education were literally thrown away.

But to return to our common schools: there is still too much, we apprehend, that is scholastic in them. School-boy knowledge is still too much a mystery; a thing necessary to be acquired, but without any distinct and assignable reason, on the part of the pupil or the parent, or any reason assigned and kept in view on the part of the teacher. Geography, as generally taught, is still a science too technical and dry; arithmetic is attended with too little demonstration; and grammar is as dark, to multitudes of pupils, as cabalistic lore. The direct connection of all this with some useful object, either in life or in mental culture, should be continually pointed out. "The child is father of the man;" and the child can no more study, zealously and effectively, without some useful end in view, than the man.

May not the government and instruction of a school, also, be such as will constantly appeal to the good sense, the manliness, and self-respect of the pupils, and indeed, to all those qualities which will be demanded in after life?

Finally, a safe and sound popular education must be *moral;* must be *religious;* must take hold of this nobler part of human nature, and enlist it in the cause of the common welfare. We say this nobler part; for it is but one and the same part, whether called morality or religion; the same principle, with different objects; in the one case, having regard to society, in the other to the Supreme Being; but still the same principle of rectitude. The identity in essential principle of these different regards, may be very obvious to many, but it is scarcely yet recognised in popular discussion; and it much needs to be insisted on. For although it may be too much to say, strictly and theoretically speaking, that there can be no morality without religion, yet the practical truth does not fall much short of that; and it is of the last consequence that men should feel that they are bound to the circle of their worldly duties, by their allegiance to Him who made the world.

That bond, always necessary to all well ordered society, becomes, if possible, still more important, as other bonds, those of despotic power and coercion, are loosened. There cannot, therefore, be a more fatal mistake, in educating the youth of a free country, than to leave religion out of the plan; to leave the moral culture of the mind to the influence of chance, or the inevitable results of neglect. It is to rear them up not only without reference to the essential wants of their being, and the general condition of life, but without reference to the special situation in which they are to act. A harbarous state of society, or a feudal state of society might go on,' without much religious culture or principle; a vague superstition might suffice; but so cannot a free state of society go on. It cannot; because questions are always arising in a free community, which nothing can settle but a solemn sense of duty to the country. There is no other power that can settle them but the power of conscience. For we do not believe that there is any mysterious principle in the machinery of a free government, any conservative law amidst the conflict of its parts,—the dashing together of its struggling elements,—which is to bring out of their bare and uncontrolled action, order and prosperity. No; the elements of reason and conscience must mix in the contest, or rather they must be principles taking the guidance of it, to bring it to a safe issue.

It is strange, but not less true, that all our speculations about government have been so exclusively intent upon mere formal institutions, that there steals over the mind a feeling as if there were something visionary in appealing to the power of moral principles to stand us in stead; as if, when we lay our hand on any thing but a fixed institution or a stable law, or the visible frame of a constitution, there were nothing real beneath, to support us. But we firmly believe that it is at once the tendency and only security of free institutions, to bring the element of individual responsibility into a place in government which it has never occupied before; to make the weight of the public interest and the general weal to rest more and more upon individuals; to make men say, not always as they now do, "the constitution, the constitution," but more frequently to say, "conscience, conscience is our safeguard!"

But if this principle be so essential to popular institutions, we shall now ask, whether the culture of it ought not to be now *fully* and *formally* introduced into popular education? What indeed is the object of all judicious education, but to develope the principles of human nature? And if one of them be the moral principle, why shall it not be put to school, so to speak, as well as reason, or memory, or imagination? Why shall there not be classes in every school in the rudiments of the science of morals, as well as in the rudiments of geography, mathematics, or natural history?

Nor yet is the instructor's task accomplished, by teaching morals from a book. He ought to blend moral influences, as much as possible, with the whole course of education. He ought himself to be a man of high and pure moral sensibility; to have that strong and feeling perception of the beauty of all virtue, that would reveal itself in the glowing countenance and the kindling eye when he speaks of it; to have, moreover, that highest of all religious culture, which is requisite to the right and salutary enforcement of discipline and infliction of penalties. No man ministers at a holier altar than he. He should feel, we repeat, the declaration, that his business is to make good men, as truly as to make good scholars; that the heart is committed to his care as truly as the understanding. He may do much to mould it rightly; he must do much to influence it. The school cannot be too often contemplated, either by him or others, as a moral scene. It is, indeed, a moral scene; but it is still made too mechanical, too much in its moral administration, or too exclusively of other means, a place of palpable rewards and punishments, or of catechetical instructions and formal prayers.

Indeed, the subject of public devotions, whether in schools or colleges, seems to us to present questions of the most serious moment, and of no less serious difficulty. That they are often irksome to the pupils, we fear is too certain; and if they are so, how can they be useful? We would not recommend the disuse of them; but it does seem to us, that something should be done, by connecting them, at the time, with familiar religious instruction, and by greater simplicity and fervour in those who officiate in these services, to give them a new character. If they were less frequent, and at the same time, less hurried; if more space were given for reflection, and for the use of collateral aids, what is lost in frequency might be more than made up in impression. But, at any rate, they ought not to stand apart, as they are apt to do, from the tenor and character of every thing else in a school or university. Those who take the lead in these devotions should not be looked upon as occupying a position entirely distinct from every thing else in their character and conversation, as discharging a merely official duty, as acting their part in the mere machinery of a public institution. Their prayers should breathe the spirit of their lives; a spirit not superstitious, nor ostentatious, but cheerful, grateful and devout, and desirous of imbuing their pupils with those blessed sentiments of piety and goodness, which will be their best resource and surest safeguard in all the scenes of that world on which they are entering.

But to return: there are few departments of scholastic instruction, whether higher or lower, that may not be found to yield constant suggestions for virtuous and religious excitement. The teacher, who should skilfully avail himself of such opportunities, would produce effects upon [illegible] the most extensive and lasting, and the most delightful. Sir James Mackintosh says of Dugald Stewart, and we can scarcely conceive of a higher eulogium, that "few men ever lived, perhaps, who poured into the breasts of youth a more fervid and yet reasonable love of liberty, of truth, and of virtue. How many, (he adds,) are still alive, in different countries, and in every rank to which education reaches, who, if they accurately examined their own minds and lives, would not ascribe much of whatever goodness and happiness they possess, to the early impressions of his gentle and persuasive eloquence!" Few men indeed possess the powers or opportunities of the Edinburgh professor. But, to every instructor of youth, a sphere is opened for the exertion of the noblest talents and virtues. It is a most mischievous and absurd idea, but one that has prevailed, if it do not still prevail, that such a man is not required to possess great talents, that he may be a dull and plodding man, that he may be dull in his moral sensibilities, that he need not be a religious man, and yet may very well discharge the duties of his station. But if Heaven has given to any man talent or enthusiasm, or virtue or piety, let him know that it is all wanted here, and that he can scarcely choose a nobler field for its action. Let a man enter this field, therefore, not to go through the dull round of prescribed duty;—let him throw himself into the sphere of action with his whole mind and heart, with every wakeful energy of thought and kindling fervour of feeling; to think and to act, to devise and to do, all that his powers permit, for the [illegible] that are committed to him; to develope and exhaust his whole soul in this work; to labour for and with his pupils, to win their affection, to quicken in them the love of knowledge, to inspire, with every noble impulse, the breast of ingenuous youth; to raise up sound scholars for literature, and devoted pastors for the church, and patriotic citizens for the country, and glorious men for the world; let him do this; and none shall leave brighter signatures upon the record of honoured and well spent lives. Let him do this, and whether he sit in the chair of a university or in the humblest village school, whether as a Stewart and a Cousin, or as an Oberlin and a Pestalozzi, he may fill the land with grateful witnesses of his worth, and cause a generation unborn to rise up and call him blessed.

To the friends of education, as well as to the actual labourers in its cause, let us say, in fine, press onward. The spread of knowledge has given birth to civil liberty; the increase and improvement of knowledge must give it stability and security. The fortunes of the civilized world are now embarked in this cause. The great deeps are breaking up, and the ark that is to ride out the coming storm must have skill engaged in its construction, and wisdom to preside at its helm. The warfare of opinion is already begun; and for its safe direction, knowledge must take the leading-staff. In this war, not the mighty captain, but the schoolmaster is to marshal the hosts to battle. It is he that is to train the minds which are to engage in this contest. It is he that is to train up orators and legislators, statesmen and rulers: and he, too, is to form the body politic of the world. Would the free spirits of the world look to the defence and hope of their cause? It is no dubious question, where they must look. Their outposts are free schools; their citadels are universities; their munitions are books; their pioneers, the religious schoolmaster and the pious pastor; and the mighty engine that is to hurl destruction upon the legions of darkness, is the FREE PRESS. Other ages have struggled with other weapons; but the panoply of this age must be knowledge: the gleaming of its armour must be the light that flashes from the eye of free high-minded public opinion. Call this complimenting, call it complaisance to the base multitude, call it visionary speculation, call it what you will; but the doctrine is true: and, over the liberties of the world, whether prostrate or triumphant, that truth must rise brighter and brighter for ever.

EDWARDS, William, an ingenious practical architect, was a native of Glamorganshire, in Wales, where he was born in the year 1719. He had the misfortune to lose his father, who was a farmer, when he was only two years old; but his mother continued to hold the farm, and was, in this manner, enabled to bring up her family. When about the age of fifteen, he first began to employ himself in repairing the stone fences on the farm; and in this humble species of masonry he soon acquired so much expertness as to be employed by neighbouring farmers in similar occupations. He afterwards undertook to build a workshop for a neighbour, and he performed his task in such a manner as gained him great applause. Very soon after this, he was employed to erect a mill, by which he still further increased his reputation. He was now accounted the best workman in that part of the country, and being highly esteemed for integrity and fidelity to his engagements, as well as for his skill, he had as much employment in his line of a common builder as he could undertake. In his twenty-seventh year, however, he was induced to engage in an enterprise of a much more difficult and important character than anything which he had hitherto attempted. Through his native parish runs a river called the Taff, which flows into the estuary of the Severn. It was proposed to throw a bridge over this river at a particular spot, where it crossed the line of an intended road; but to this design difficulties of a somewhat formidable nature presented themselves, owing both to the great breadth of the water, and the frequent swellings to which it was subject. Mountains, covered with wood, rose to a considerable height from both its banks, which first attracted and detained every approaching cloud, and then sent down its contents in torrents into the river. Edwards, however, undertook the task of constructing the proposed bridge, though it was the first work of the kind in which he had ever engaged. Accordingly in the year 1746, he set to work, and, in due time, completed a very light and elegant bridge, of three arches, which, notwithstanding that it was the work of both an entirely self-taught, and an equally untravelled artist, was acknowledged to be superior to any thing of the kind in Wales. So far his success had been as perfect as any thing could be desired. But his undertaking was far from being yet finished. He had, both through himself and his friends, given security that the work should stand for seven years, and for the first two years and a half of this term, all went on well. There then occurred a flood of extraordinary magnitude which swept away the whole structure. This was no light misfortune in every way to poor Edwards; but he did not suffer himself to be disheartened by it, and he immediately proceeded, as his contract bound him to do, to the erection of another bridge. He now determined, however, to span the whole width of the river, by a single arch of the unexampled magnitude of 140 feet from pier to pier. He finished the erection of this stupendous arch in 1751, and had only to add the parapets. when he was doomed once more to behold his bridge sink into the water over which he had raised it, the extraordinary weight of the masonry having forced up the key-stones, and, of course, at once deprived the arch of what sustained its equipoise. Heavy as was this second disappointment to the hopes of the young architect, it did not shake his courage any more than the former had done. The reconstruction of his bridge, for the third time, was immediately begun with unabated spirit and confidence. Still determined to adhere to his last plan of a single arch, he had now thought of an ingenious contrivance for diminishing the enormous weight which had formerly forced the keystone out of its place. In each of the large masses of masonry, called the *haunches* of the bridge, being the parts immediately above the two extremities of the arch, he opened three cylindrical holes, which not only relieved the central part of the structure from all over-pressure, but greatly improved its general appearance in point of lightness and elegance. This bridge, which, at the time of its erection, was the largest stone arch known to exist in the world, was finished in 1755—the whole undertaking having occupied the architect nine years in all—and it has stood ever since. Edwards afterwards built many bridges in South Wales, having their arches formed of segments of much larger circles, and consequently much more convenient. He found his way to this improvement entirely by his own experience and sagacity; as, indeed, he may be said to have done in regard to all the knowledge which he possessed in his art. Even his principles of common masonry, he used himself to declare, he had learned chiefly from his studies among the ruins of an old Gothic castle in his native parish.

Edwards was likewise a farmer to the end of his days. Such, moreover, was his unwearied activity, that, not satisfied with his week-day labours in these two capacities, he also officiated on the Sabbath as pastor to an Independent congregation, having been regularly ordained to that office when he was about thirty years of age, and holding it till his death. He accepted the usual salary from his congregation, but returned it all, and often much more, in charity to the poor. He always preached in Welsh, though early in life he had made himself acquainted with the English language. He died in 1789, in the seventieth year of his age, leaving a son who inherited his abilities.

EGERTON, DANIEL, formerly of Covent Garden Theatre; was born in London on the 14th of April, 1772. His paternal name was Bradstock; and he was originally a clerk in the court of requests at Whitechapel, which he abandoned to join the Royal Theatre after Palmer retired from its direction. He made his debût at Birmingham, on the 4th of June, 1799, as *Captain Absolute* in "The Rivals," and he continued there for the two following summers, passing the intermediate winters with Mr Stephen Kemble in Edinburgh, who transferred him to the boards of Newcastle-upon-Tyne, where he first appeared in Nov. 1801. Two years after, he accepted an engagement at Bath, where he made his first appearance for the benefit of Mrs Edwin, in May, 1803, as *Frederick Bramble*, in Colman's comedy of the "Poor Gentleman." On Elliston's final secession from the Bath Theatre, the field was left open to Mr Egerton, who led the business of that establishment for the next six years, until, in 1809, he was engaged at Covent Garden Theatre, and made his appearance there in Oct. as *Lord Avonmore*, in Morton's comedy of the "School of Reform." Here he distinguished himself by great assiduity, and became favourably established for many years, and in the summer season rented and superintended the performances at Sadler's Wells. About three years before his death, he withdrew himself from Covent Garden, and embarked with Mr Abbott, formerly of the same theatre, in the management of the Coburg. The speculation, however, failed; and by it Mr Egerton not only sacrificed the hard earnings of a long career, but, to extricate himself from the difficulties in which it involved him, he was compelled to take the benefit of the insolvent act, which, it is supposed, helped to accelerate his death, which took place at Chelsea, in July, 1835. His only dependence at his decease was a pension of £75 from the Covent Garden Theatrical fund, of which he was for many years secretary.

EGGS, (*a.*) A large number of the eggs consumed in London are brought from France, chiefly from the department of the Pas de Calais, which is opposite to the coasts of Kent and Sussex. A writer in a newspaper printed at Arras, the capital of the department, recently made strong complaints of the dearness of eggs in that part of France, and after remarking that the immense quantity sent over to England was the cause of the high price, he entered into the following calculations as to the value of this branch of trade:—"Out of 72,000,000 of eggs annually imported into England from France, Germany, the Netherlands, and other countries, France contributes 55,000,000. Calculating the first cost at about 4½d. per dozen, England pays annually to France for eggs about £77,000. Suppose the freight, the profit of the importer and retail dealer, the import duties, the loss by breakage and other damage, to increase the price to about 1s. 3d. per dozen, the total amount paid by consumers of French eggs in England will be no less than £192,000." The price of French eggs in the shops in London is greatly exaggerated in this statement, and the French writer has understated the total quantity imported, though he is perhaps correct as to the number imported from France. From an official account, we perceive that the importation of eggs from all parts in the year ending January 5th, 1837, was 69,000,000; and the duty of 1d. per dozen produced so large a sum as £24,048. In 1820 the quantity of eggs imported was 31,000,000, the duty being the same as at present, and yielding a revenue of £11,[illegible]. In 18[illegible] the importations were nearly as great as during 1834 and 1836, which were the highest years of importation for eggs which have yet occurred. These 69,000,000 of eggs cannot be obtained from much fewer than 575,000 fowls, each producing 120 eggs on an average, all beyond this number being required for domestic consumption. Assuming the grounds of this calculation to be correct, the 55,000,000 eggs supplied by France are the production of 458,333 fowls, each of which furnishes ten dozen eggs, imported at a duty of 10d., being a tax to that amount on each fowl.

"In 1813," says M. Legrand, "the number of eggs exported from France was 1,734,[illegible]. Between 1816 and 1822 the numbers exported rose rapidly from 8,733,000 to 55,717,500, and in 18[illegible] the number had increased to 90,441,[illegible]. In 18[illegible] 76,190,120 were exported for England, [illegible] for Belgium, 49,696 for the United States, 42,[illegible] for Switzerland, 34,800 for Spain, and [illegible] to other parts of the world. The total amount of the exportations for that year was [illegible] francs. The consumption in Paris is calculated at 11[illegible] eggs per head, or 101,152,400. The consumption in other parts of France may be reckoned at double this rate, as in many parts of the country dishes composed of eggs and milk are the principal [illegible] in all the meals. The consumption of eggs for the whole kingdom, including the capital, is estimated at 7,231,160,000; add to this number those exported and those necessary for reproduction, and it will result that 7,380,925,000 eggs were laid in France during the year 1835."

EGREMONT, EARL OF. The Right Hon. George O'Brien Wyndham, third Earl of Egremont and Baron Cockermouth (1749,) and the sixth Baronet (of Orchard Wyndham, Somersetshire, [illegible]), F.R.S. and F.S.A., was born Dec. 18, 1751. He succeeded to the peerage when a child, by the death of his father, Aug. 21, 1763. His education was at Eton. The heir to a splendid fortune,* which was much augmented during his minority, the earl of Egremont, from his earliest years, displayed the liberal spirit, and patrician magnificence, for which he was distinguished throughout his long life. Naturally endowed with fine taste, his mind received all that cultivation which wealth and rank command, and which serve to make the well educated Englishman at once sound and solid in the graver walks of knowledge, and accomplished in those which adorn every birth and station. Without taking a very prominent part in the discussions of that branch of the legislature of which he was a member, his lordship always enjoyed much political consideration. In times of pressure and peril, his purse, his exàmple, and his exertions were nobly devoted to the cause of his country. In his patronage of living artists and of our native school, his munificence was conspicuous. Many of the finest pictures produced in our day in England, and certainly the very finest works of sculpture, were the results of his unlimited commissions; and while he added splendour to his palace by these works (he built large galleries at Petworth House, Sussex, purposely for their reception), he did not neglect the more humble aspirant—youth beginning to toil for fame, merit obscured, and industry too scantily requited. His native affection for the fine arts was strengthened and confirmed by his having, when about eighteen years of age, resided for some length of time at Dresden and Vienna, with his father-in-law, Count Bruhl; when he constantly spent a portion of almost every day in the renowned galleries of those cities. He thus became qualified to appreciate and enjoy the beauties and excellencies of the important collection of pictures and statues which he inherited, and inclined *to extend* it during the whole course of his long and useful life. At first he added pictures by the elder masters; but he afterwards resolved to buy *none but* modern productions; observing, that he could most beneficially patronize the arts, and render them useful and honourable to the country, *by encouraging* genius and talent sufficiently developed at home, and well worthy of support; and this amiable and patriotic resolution he steadily *maintained*. Hence are to be seen, in his extensive and valuable collection, upwards of two hundred modern British productions in painting *and in sculpture*; the greater part purchased by his lordship from artists now living, the rest at public or private sales, as circumstances permitted, or of *the artists* themselves, during their lives. In all other relations of society, lord Egremont was equally liberal and magnificent. His charities were as prompt and ample as their occasions were numerous. He died on the 11th Nov. 1837, and was succeeded in the title by a nephew. By a lady now deceased, who bore the name of Mrs Wyndham, the daughter of the Rev. Mr Iliff, one of the under masters of Westminster school, the earl of Egremont had issue three sons and three daughters. The former are, George Wyndham, Esq. now of Petworth, colonel in the army; Henry Wyndham, Esq. of Sladeland, Sussex, a major-general in the rmy; and Charles Wyndham, Esq. of Rogate, Sussex, a colonel in the army. The daughters are, Frances, married to Sir Charles Merrik Burrell, Bart. Mary, married in 1819 to George, earl of Munster, eldest son of his late Majesty William V., and —— married to John King, Esq.

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* It is stated that, when the earl succeeded to the [illegible] estates, the rental amounted to not quite £[illegible] per [illegible] which at the time of his decease had been increased to [illegible] annually. In the last sixty years he had distributed in [illegible] charity and liberality the immense sum of £[illegible], or [illegible] £20,000 yearly.

EGRIPOS; a town of Greece, situated on the est side of the island of Eubœa, now commonly lled the Negropont, which forms a part of the w kingdom of Greece. Egripos is in N. lat. 38° 26′, E. long. 23° 37′, and stands at the narrowest part of the channel, which separates the island from the main land. Egripos were formerly a Greek town, under the name of *Chalcis;* but in modern times once belonged to the Venetians, when that mercantile and warlike state possessed a large part of Greece, with many of the islands, and carried its conquests and its commerce all over the eastern part of the Mediterranean. Egripos is defended on the land side both by a ditch and wall, which latter indeed runs all round it, and shows by the numerous winged lions of St Mark that the Venetians were the builders. The town is (or, we should perhaps rather say, was) exclusively inhabited by the Turks: the Greeks and Jews dwell in a small suburb to the north of the town and carry on a little trade. This place, if Greece ever becomes populous and well-cultivated, would serve as the place of export for the fertile island of Eubœa, which has no port on its iron-bound eastern coast, and would also furnish an outlet for the produce of the rich plains of Bœotia which lie opposite the town on the west.

The channel, which separates the island from the mainland, presents a curious phenomenon. It is here only forty yards wide; and it is further divided into two parts by a rock, on which a fort is built. The passage between the rock and the main land is the wider of the two, but has not more than three feet water. The other passage between the rock and the walls of the town is thirty-three feet wide, and when the water is highest is seven feet deep in the shallowest parts. The Mediterranean, it is well known, like other inland seas, is very little affected with tides, though, undoubtedly, it has tides to some extent; and these, from the configuration of the coasts, may be felt more in some parts than others. This deeper channel, however, presents most extraordinary and irregular tides or currents, which, though found by observation to depend in some degree like other tides on the moon's attraction, are not reducible to a regular system. Sometimes the water will run as much as eight miles an hour, with a fall of about one foot and a half under the bridge. It is seldom at rest, changes its direction in a few minutes, and will at once resume its usual velocity of four or five miles an hour in either direction, as it may happen to run. The greatest rapidity is always to the south. The immediate cause of this phenomenon must be the continued variation of the relative level of the waters on the north and south side of the channel, which is not wide enough to allow such a free communication as would ensure either a constant level, or a constant current in one direction. But what cause this perpetually varying level is owing to, or to what combination of causes, is difficult to say. The changing winds, particularly those from the N.E., may be one cause. The current from the Dardanelles sets fairly on the east side of the island, and it is therefore supposed can have no effect on the stream of the Euripus, though this appears by no means certain. Aristotle, it is said, laboured in vain to find out the cause of this phenomenon, and according to some accounts, drowned himself out of chagrin at being thus foiled. However this may be, Aristotle died at Chalcis or Egripos.

EICHHORN, J. G., was born, 1752, in the principality of Hohenzollern-Oehringen. He acquired his first celebrity as professor, at Jena, by his history of the commerce of East India before Mohamed, in 1775, whence he removed, 1788, to Gottingen. Being an excellent oriental scholar, he began, about the same time as Michaelis, to subject the bible to a more minute scrutiny. The critical study of the original text led him in his introduction to the New Testament, to start a new and ingenious hypothesis on the origin of the Gospels There existed, Eichhorn asserts, an original document in the Aramaic language, from which the three first Gospels have been drawn: it contained but a short narrative of the principal transactions of Jesus Christ, from his baptism to his death, not in a chronological order, but composed from communications made by the apostles. This groundwork formed the materials from which those apostles, who had an intention to write, constructed a more complete history. The hypothesis has been introduced into this country by the bishop of Peterborough. The two last volumes of this *Introduction* appeared only a short time before Eichhorn's death. The hypothesis itself, although, indeed, more specious and dazzling than natural and satisfactory, has had this beneficial result, that it set the theologians, not only of Germany, but also of other countries, at work, and most important and useful researches have been made in consequence of it. On the other hand, this elaborate criticism has, unfortunately, occasioned in this country the condemnation of German divinity altogether. Eichhorn distinguished himself not only as an orientalist and divine, but also as an historian and bibliographer. He published a "History of Literature, from its Beginning to the Latest Times," in 11 vols.; a "General History of Culture and Literature of Modern Europe," in 2 vols.; a "History of Eloquence, in the Modern Languages," in 3 vols.; a "History of the Three Last Centuries," in 6 vols.; besides a "General Library of Biblical Literature," in 10 vols.: and a "Repertorium of Biblical and Oriental Literature," in 18 vols.; an "Introduction to the Old Testament," in 5 vols.; and the "Introduction to the New Testament," of which we have spoken, also in 5 vols. He translated also the Hebrew Prophets, in 3 vols. From this list, which is far from being complete, our readers may form an idea of the indefatigable labours of the German divine. He was also the editor of the Goettingen Anzeigen. He enjoyed the highest reputation all over Germany, and was on terms of the most intimate friendship with all his colleagues at Gottingen. From the gradual decline of his strength, he felt the approach of death with the most imperturbable tranquillity, and he remarked, in the last hour, to his friend, the anatomist Langenbeck, and the celebrated professor Blumenbach, as a point of physiological curiosity, how he felt by degrees the vital spirit withdrawing from the different parts of the body, and, only a quarter of an hour before he breathed his last, he yet distinctly stated that life was becoming extinct in the spina dorsi. He died on the 25th of June, 1827. His son, also professor at Gottingen, has distinguished himself by an excellent work "on the History of the German Law."

ELDON, John Scott, Earl of, for twenty-five years Lord High Chancellor of England, was the third and youngest son of William Scott, boastman, or coal-fitter, of Newcastle-upon-Tyne. Nearly six years the junior of his brother lord Stowell, he was born on the 4th of June 1751; which, being the birthday of his old master and kind friend, George III., the king was wont to say—"Do not speak to me, Lord Eldon, till I have paid my respects to you on your birthday." He received his youthful education at the grammar-school of Newcastle; and at the early age of fifteen was sent to the university of Oxford. He was elected fellow of university, July 11, 1767, proceeded to the degree of Bachelor of Arts, Feb. 20, 1770; and gained the chancellor's prize, "On the Advantages and Disadvantages of Foreign Travel," in 1771. He proceeded to the degree of M. A. Feb. 13, 1773, having been admitted a member of the Middle Temple on the 28th of the preceding month. With the exception of keeping term, he resided, however, in or near Oxford. The vacations were spent at the house of his friend Mr Lane, at Mill-end near Henley. During this time, in order to increase his income, he took a part in the tuition of University college. He also read lectures as the deputy of Sir Robert Chambers, the Vinerian professor of common law. This was from 1774 to 1776; on the 9th Feb. of the latter year he was called to the bar, and quitted Oxford for the metropolis. He gave his attention principally to conveyancing, and the practice of the courts of equity; but, after some years of laborious study, his prospects were so discouraging, that he resolved to quit London, and practise as a provincial counsel in his native town. But in the spring of 1781, he was retained to argue a case before a committee of the house of commons, and the ability which he manifested was soon circulated through the profession, with the report that he had resolved to leave London. Mr Mansfield and Mr Wilson, two of the most eminent counsel, conjured him not to quit Westminster Hall. They assured him that his success was certain; and Mr Wilson (afterwards a judge of the common pleas) added, that the want of money ought not to draw him, for the assistance of many was ready to be proffered, and that he had the small sum of £500 which he was desirous to invest on this certain security. This kind offer, which was made on Mr Scott's return from the committee-room to his house, he was not under the necessity to accept, as from that period all his wants were supplied, and more than supplied, by his own exertions. Shortly after, he became the leader on the northern circuit. The great lord Thurlow soon understood, and therefore appreciated, his abilities; he would have bestowed upon him a mastership in chancery, which, however, Mr Scott declined. His powers now became manifest, and in 1783 a patent of precedence was granted him by lord Loughborough, then first commissioner of the great seal. In the same year, Mr Scott was introduced into parliament, upon lord Weymouth's interest, for the borough of Weobly, for which he continued to sit until 1796. As a parliamentary speaker, his oratory was considered inferior to his professional abilities as a pleader. There was a want of that warmth and animation—that bold declamatory vehemence, that distinguish the senatorial from the forensic orator. His speeches were always shrewd and clear—addressed to the understanding rather than the fancy—impressive, but not sufficiently animated. In the month of June, 1788, he was appointed solicitor general, and was knighted—an honour which it appears he was desirous of declining, but it was insisted upon by his majesty. Only one instance had then occurred of a solicitor-general being knighted since 1723, though subsequently it has become customary. Shortly after this time, his majesty's first illness occurred, and the country was in consequence much agitated upon the Regency question. The bill introduced by Mr Pitt on that occasion, was drawn by Sir John Scott; to whom also are attributed the line of conduct adopted by the minister, and the truly constitutional doctrines for which he contended.

Sir John Scott's progress towards the highest honours was certain, but gradual. His merit continually developed itself, and familiarity with the forms of business, a habit of public speaking, and acquaintance with his own powers, wore away the diffidence by which he had formerly been oppressed. On the 13th of February, 1793, he was appointed attorney-general, which office he held for six years. During that time, his labours were unremitting. Often was he seen at five o'clock in the morning in Lincoln's Inn-fields, walking to his chambers. In 1796, he was returned for Boroughbridge as the colleague of Sir Francis Burdett. On the death of Sir James Eyre he succeeded him as lord chief justice of the common pleas; and, on the 18th of July, 1799, was raised to the peerage as baron Eldon, of Eldon, in the county of Durham. But this was only a foretaste of the honours which his knowledge and ability were certain to secure; and accordingly, in 1801, he became lord high chancellor of England. In the same year he was nominated high steward of the university of Oxford, by the duke of Portland, then chancellor of the university; a nomination ratified by the unanimous vote of convocation, by which the degree of D.C.L. by diploma was immediately after conferred upon him. Lord Eldon resigned the great seal on the 7th of February 1806; he was re-appointed April 1, 1807, from which period he continued in office until 1827, being altogether a period of nearly twenty-five years. He died on the 13th Jan. 1838.

Testimonies to the judicial merit of lord Eldon are so common that the difficulty lies in selection. Perhaps that of Sir Samuel Romilly—himself one the purest and ablest of men—is the highest in point of authority. He stated in the house of commons on the 7th of March, 1811, "that there never was a man in the court of chancery who more endeared himself to the bar, or exhibited more humane attention to the suitors. There never presided in that court a man of more deep and various learning in his profession; and in anxiety to do justice, that court had never seen, he would not say his superior, but the equal of the lord chancellor. If he had a fault, it was an over-anxiety to do justice." It was his peculiar gratification, in his latter days, to speak freely of the imputations of delay and indecision which had been raised against him, with feelings of conscientious satisfaction, and a declaration to those to whom his heart was really open, that all the virulence with which he had been attacked on this score weighed but as a feather in the balance against the blessed conviction of his own mind, that he had never decided a case until he had perfectly satisfied himself upon its real merits. His reported judgments are contained in twenty volumes; and of the whole few indeed have been reversed.

In personal appearance, lord Eldon was everything that might be expected in a supreme judge: the deep thought betrayed in his furrowed brow—the huge eye-brows, overhanging eyes that seemed to regard more what was taking place within than around them,—his sternness, dignity, and venerable age, all tended to inspire respect. His voice was very remarkable. It was so weak that to persons unaccustomed to hear him in his court, he seemed rather to whisper than to speak; but his utterance was extremely distinct, and his clear, soft, low tones were singularly forcible and impressive. In private life he was exemplary. He never appeared to such an advantage as amidst the charities of home, by his own fireside, where, with the friends who loved him, his relations, his children, and grand-children, he passed the declining years of his life, submitting with tranquillity and cheerfulness, which never forsook him, to the infirmities from which at his advanced age he could scarcely hope to be exempt. By his wife, Elizabeth, daughter of Aubone Surtees, Esq. banker, of Newcastle-upon-Tyne, the earl of Eldon had two sons and two daughters.

By his will, he left to his elder daughter, the lady Elizabeth Repton, a life interest in £4000 per annum; to lady Frances Bankes, £4000 a year; to his grandsons, the children of Mr Bankes and Mr Repton, £10,000 each, and £5000 each to the grand-daughters. To his butler he left a £100 a year for life; £50 each to all the servants that lived with his lordship above a certain number of years, and £20 to every other domestic in his service. All the residue of his vast property he left to his grandson, the present earl of Eldon, with remainder over to the male children of his daughters in succession, in the event of his lordship (who has three daughters) not having male issue; but giving the earl power of making ample settlements on the female children. The personal property was sworn to be under £700,000.

ELEVATION OF LAND. That our existing continents and islands have been raised from the bed of the ocean by successive eruptions of igneous rocks, is now an established fact in geology. That these elevations took place at different times with considerable intervening periods, is also apparent, from the unconformable manner in which the successive formations are inclined towards each other, and the different characters of the organic remains found in each. Some geologists suppose that these elevations were paroxysmal, others again that they have been gradual and continuous. One thing appears evident, that repeated elevations must have taken place before the strata were finally raised above the level of the ocean. Mr Lyell concludes that almost the whole of Europe emerged from the ocean at a period posterior to the deposition of the chalk. Although it appears that the principal changes have taken place in the strata of the old continents, previous to, and at the period of their final emergence from the ocean, yet there are also indications that since the commencement of the existing state of things, and the introduction on the surface of the present system of vegetable and animal life, considerable elevations of our shores have taken place, and are still in progress. These comparatively modern changes have been recently investigated and described by several observers. Mr Lyell first pointed out the elevation of the rocks on the coasts of Sweden and Denmark, and the existence of recent balanæ still adhering to these rocks at a considerable elevation above the highest tide marks. He also has pointed out the existence of modern shells in the silt or loess of the valley of the Rhine, from below Cologne to the falls of Schaffhausen, at an elevation of 3 to 400 feet above the river. Shells of existing testacea have also been found at various elevations among the diluvial deposits of the counties of Lancashire, Cheshire, and north Shropshire, and on Moel Tryfane mountain near the Menai Straits, at an altitude of 1392 feet above the level of the sea. Mr Smith, Jordanhill, has also discovered recent marine shells at various elevations on the Frith of Clyde, among which are found several living genera, but not now inhabitants of the Clyde. Appearances of elevated sea beaches are also observable in the east coast of Scotland, about Dunbar and other parts of East and Mid Lothian. In the north of Scotland also the same appearances are visible on the Morayshire coast, bordering the Moray Frith, where there are several caves and isolated rocks, which have evidently owed their excavations to the action of the sea, but which are now elevated beyond the reach of the highest tides; recent marine shells are also there found on raised beaches, and a longitudinal rent or fraction of this sandstone, which had evidently occurred long after its original consolidation, can be traced extending for miles along this coast.

ELFORD, Sir William, bart., of Bickham near Plymouth, F.R.S. and F.L.S., late recorder and M.P. for Plymouth, and lieutenant-colonel of the South Devon militia, was descended from an ancient Devonshire family, and was the elder son of the Rev. Lancelot Elford, vicar of Plympton, by Grace, daughter of Alexander Wills, of Kingsbridge, Esq. After acting for some time as major of the South Devon militia, he became first lieutenant-colonel in 1796. In the same year he was returned to parliament for the borough of Plymouth, of which he was previously recorder. He supported the policy of Mr Pitt; and on the 14th of Nov. 1800 he received a patent of baronetcy. At the general election of 1802 he was rechosen for Plymouth without opposition; but in 1806 was defeated by Sir C. M. Pole, bart. He died Nov. 30, 1838. Sir William was a skilful amateur painter, and there was scarcely an exhibition of the royal academy for a long series of years, without a contribution from his easel. His subjects were usually landscapes. He was also attached to scientific inquiries.

ELGIN, (*a.*) The cathedral of Elgin is situated at the eastern extremity of the town, and not in the centre of the burgh, as stated in some impressions of the Encyclopedia. It was dismantled of its lead by the earl of Murray, regent of Scotland, in order to replenish his exhausted coffers. Agreeable to the mandate of the regent, the Elgin and Aberdeen cathedrals were unroofed, and the lead was shipped at the latter place for Holland; but scarcely had the vessel left the harbour than she sunk, and was, with her crew and cargo, wholly lost. The Elgin cathedral thus uncovered was never repaired, owing, no doubt, to the progress which the doctrines of the reformation had by this time made; and being thus exposed to the elements, the wooden part of the great tower gradually gave way, and on Easter Sunday morning, 1711, it entirely fell to the ground. In order, as far as possible, to prevent the cathedral from undergoing further dilapidation, the barons of exchequer some years since granted a sum of £900 to keep it in repair. An ascent to the top of the two largest steeples, by means of interior stairs, which could not formerly be ascended, was then rendered easy; by which means the visitor can command one of the most extensive and richest prospects in Scotland.

The diocese of Moray, of which this splendid building was the cathedral church, was one of very great extent. It comprised the counties of Elgin, or Moray, and Nairn, and the greatest part of the counties of Banff and Inverness, and had no fewer than fifty-six pastoral charges belonging to it. The last bishop of the diocese was Patrick Hepburn, known in Scottish history as the ecclesiastic who was fined for receiving into his house the excommuned earl of Bothwell.

The cathedral is surrounded by a burying-ground, one of the largest churchyards perhaps in Great Britain: in it are interred the remains of many distinguished persons, including several of the kings of Scotland.

ELLISTON, Robert William, an eminent performer in the higher walks of comedy, was born in London, April 7, 1774. His father, a watchmaker, was the youngest son of an eminent farmer at Gidgrave, near Orford, in Suffolk, and brother to the Rev. William Elliston, D.D. master of Sidney-Sussex college, Cambridge. At nine years of age young Elliston was placed at St Paul's school, where, it is said, his ambition for scenic celebrity was first excited by the applause he received at the school speeches in 1790, on delivering an English thesis. He is remembered, about the same period, to have represented Pierre in "Venice Preserved," at some private performance at the Lyceum; and he shortly after abruptly quitted school (at the time he was the fourth [illegible]) without the knowledge of his friends. [illegible] wandered to Bath, where he found an opportunity of making his theatrical essay, in the humble part of Tressel, in "Richard the Third," April [illegible] 1791. Although this performance was very successful, the manager was not able to offer him a permanent engagement: he obtained, however, a letter of recommendation to Tate Wilkinson, of York, who immediately engaged him. The principal characters in Wilkinson's company being entirely pre-occupied, the truant in a short time became weary of his situation, and wrote to his [illegible] a letter supplicating for forgiveness. He was allowed to return to his family, but could not be persuaded to relinquish his taste for the stage. In 1793 he appeared a second time at Bath, in the character of Romeo: and during the season he continued to play a variety of characters in tragedy, comedy, opera, or pantomine. In 1796 he carried off from Bath Miss Rundall, a teacher of dancing, and soon after their marriage in London made his first bow to a London audience at the Haymarket, June 24, of that year, in the very opposite characters of Octavian in "The Mountaineers," and Vapour in "My Grandmother." From the Haymarket Mr Elliston was engaged to perform for a limited number of nights at Covent Garden, but owing to some disagreement with Mr Harris, he again joined the Haymarket corps; and on Mr Colman's new arrangement in 1803, he became not only his principal performer, but also his acting manager. In the succeeding year, when John Kemble quitted Drury Lane, Mr Elliston was engaged to supply his place: after the theatre was burnt, when the company performed at the Lyceum, he left it in consequence of some quarrel with Thomas Sheridan. He then took the circus, and having given it the name of the Surrey Theatre, commenced producing some of the best plays of Shakspeare and some operas, having so far altered them as to bring them within the meaning of the licence, a [illegible] which he defended in a well-written pamphlet. He acted the principal parts, and was equally applauded in Macbeth and Macheath. In 1805 he published "The Venetian Outlaw, a Drama in hree acts," which he had himself adapted from the French—"*Abellino, le grand Bandit.*" On the re-opening of Drury Lane Theatre, Elliston again ormed part of that company: on the first night he elivered Lord Byron's opening address, and peronated the character of Hamlet. When the heatre was let out on a lease in 1819, he became he lessee, at a yearly rent of £10,200; and so ontinued until declared a bankrupt, in 1826. After some speculations in the Olympic theatre, he gain undertook the superintendence of the circus, nd occasionally performed upon its boards, in umberland's Jew, Dr Pangloss, and some smaller arts. His death was occasioned by apoplexy, on riday, the 7th of July, 1831. Elliston is immoralized by the subtlist of dramatic critics, Charles amb, who has two papers upon him in his own xquisite style. Other distinguished critics speak ghly of him. "Mr Elliston," says Leigh Hunt, was the best comedian, in the highest sense of he word, that we have seen. Others equalled him some particular points; Lewis surpassed him in ness; but there was no gentleman comedian ho comprised so many qualities of his art as he d, or who could diverge so well into those parts tragedy which find a connecting link with the aver powers of the comedian in their gracefulness d humanity. He was the best *Wildair*, the best *ker*, the best *Aranza;* and carrying the seriouss of *Aranza* a little further, or making him a *gic gentleman* instead of a comic, he became the st *Mortimer*, and even the best *Macbeth*, of any *rformer* who excelled in comedy."

ELRINGTON, Thomas, D.D., lord bishop of ighlin and Ferns, M.R.I.A., &c. &c. Mr Elgton obtained a scholarship in the university of blin in 1778; and in 1781 was elected Fellow. 1794 he became the first Donnelan lecturer, cted on the foundation of Mrs Anne Donnelan, the parish of St George, Hanover Square, in county of Middlesex, spinster. The subject his lectures was, "The proof of Christianity ived from the miracles recorded in the New stament." These lectures were printed in blin, in 8vo. 1796, together with the Act Sers, which he preached Nov. 15, 1795, for the gree of Doctor of Divinity. In 1795 he was sen professor of mathematics; and on the 25th Dec. 1806, he was presented to the rectory of trea, in the county of Tyrone, and diocese of agh. In 1811, he was appointed provost of nity college; a situation which he filled for sed years with the highest credit to himself, and ntage to those whose interest and welfare it his happy lot to promote. In the year 1820, was consecrated bishop of Limerick; and he translated, in 1822, to the see of Leighlin and ns. Dr Elrington published an edition of Eu, enlarged by notes, which is now the text book he Dublin university, and throughout Ireland. also presented the literary world with a valuedition of Juvenal, illustrated by notes critiand explanatory. His polemical publications s, "Reflections on the Appointment of Dr ber as the political agent of the Roman Cathoergy of Ireland," 1809, 8vo.; "The Clergy he Church of England truly ordained," 1809, ; and some other pamphlets. Dr Elrington died at Liverpool, on his way from Dublin to London, in July, 1835.

ELSTOW; a parish and village in the county of Bedford. The village, which is a mile and a quarter from the town of Bedford, is only remarkable as the birth-place of John Bunyan, born here in 1628. Numerous engravings have been made of the house of his nativity. Population of parish in 1831, 561.

ELVAS; a city of Portugal, in the province of Alemtejo. Though ranked the second city of the Alemtejo, it is decidedly the best fortified and the strongest, the defensive works being a *chef d'œuvre* of the Conde La Lippe Schomberg, and a perfect model of their kind. Fort La Lippe, situated on a steep hill at the back of the city, is impregnable except to famine; and fort St Lucia in the front, connected with the redoubts on either side, is of sufficient importance to cause much trouble to a besieging force. There are three gates to the city; the Porta d'Esquina on the north; the Porta d'Olivença in the centre, and the Porta de San Vicente on the south; all strongly fortified, with ravelins, cavaliers, and counter-guards, forming a curve bent outward. The only gate by which strangers are allowed to enter is the Olivença, because they are thus forced to pass one-half of the works, and are exposed to the observation of a long chain of sentinels. From this gate several long and narrow streets diverge into different parts of the city.

The walk round the ramparts is extremely fine, affording an uninterrupted view of the country for several leagues around. Here may be seen the plain and unpretending slabs laid over the remains of two of our gallant countrymen, brigadier-general Houghton and colonel Oliver; the one fell at Badajoz, the other at Albuera; both which fields are overlooked from the rampart where they repose. The inscriptions are in English and Portuguese, and are simple and unpretending.

ELY, Isle of; a large district in Cambridgeshire, consisting of a great part of the county, surrounded by large fens, which were formerly overflowed with water. It extends from the bridge at Tyd, on the north, to Upmere on the south, about twenty-eight miles in length; and from Abbots on the east, to the river Nene, near Peterborough, on the west, about twenty-five miles in breadth. It is bounded on the north by Lincolnshire, on the west by Northamptonshire and Huntingdonshire, and on the east by Norfolk and part of Suffolk.

The *city of Ely* is situated on the banks of the river Ouse, about the centre of the county of Cambridge, sixty-seven miles N. by E. from London, sixteen N.N.E. from Cambridge, and thirteen N. W. from Newmarket. Population in 1831, 6189. The venerable Bede derives its name from the vast quantities of eels taken in the low fen grounds previous to and in his time, when they were not embanked or drained. The town consists principally of one long street, from which other smaller ones branch; nearly in the centre is a tolerably spacious market place. The shire hall, or court house, is a convenient building, having a centre and two wings; the former contains apartments for holding the courts—while the north wing is appropriated to the purposes of an infirmary, and the south is a chapel: a house of correction is behind the court house, and the common gaol is on one side of it. The district around Ely is strictly agricultural, and the manufactures of the city are neither various nor extensive; there are some potteries, and several oil mills. Gardening is pursued generally and prosperously; nearly twenty acres of land, in the two parishes, are appropriated to the growth of that delicate vegetable, asparagus, much of which is despatched to the London market; and by means of the river Ouse a considerable trade is carried on in corn and coal. The government of the town is vested in magistrates who are appointed by the bishop; they are five clerical and one lay, and are justices of peace within the isle—one of these exercises the duties of high sheriff. Assizes are held twice a year.

The most attractive object of Ely is its *cathedral*. A convent is said to have been built here about the year 673 by Ethelfreda, a daughter of one of the kings of east Anglia, and a famous saint of those days. It is supposed that remains of the sacred edifices then erected still exist in some of the prebendal houses in the neighbourhood of the present cathedral. It was not till the year 1109 that the bishopric of Ely was established; but the present church, which was then converted into a cathedral, or rather the original building of which the present church is an extension, had probably been founded some time before that event. Little, however, if any thing, beyond perhaps a portion of the foundation of the ancient abbey-church, remains in the present building. The oldest part of the cathedral is the transept, which appears to be of the early part of the twelfth century. The rest has been the work of successive ages. The nave is ascertained to have been finished some time before the year 1174. The whole wears the heavy features of the early Norman style. Between 1174 and 1189 the great western tower was erected by bishop Rydel. Its massive proportions still indicate the prevalence of the old idea of firmness and breadth as the principles of architectural effect; but the lighter and more ornamental character of the upper part of it, composed of successive tiers of small columns, and freely admitting the light through numerous windows, shows the change that was even then rapidly coming over the art. The elegant vestibule projecting from the line of the front, and formerly known by the name of the Galilee, was added about the close of the same century by bishop Eustachius.

The part of the church to the east of the transept was begun by bishop Hugh Northwold about 1234, and finished in 1250. During this interval also the present central tower was erected by the sub-prior of the convent, Alan de Walsingham, in the room of a former square-shaped tower, which had fallen on the 12th of February, 1322. The three most westerly arches of the nave had also been thrown down by this accident; and they too were restored by the liberality of the sub-prior. His expenditure upon the whole work was £2406 4s. 11d. The part of the cathedral immediately to the east of the central tower, which was originally called the presbytery, is now fitted up as the choir; but this is an alteration which was only made about the middle of the last century. The choir was formerly immediately under the tower. The interior of Ely cathedral is very magnificent. The vaulted roof of the nave is sixty feet from the floor, and now that the presbytery, or east end of the church, by being converted into the choir, has been added to the vista from the west end, an extent of prospect is produced corresponding to this altitude. Much of the tracery and other sculpture on the windows and pillars is also exceedingly [illegible] and beautiful. In the great window of the east end of the church there is a painting of St Peter and the delivery of the same apostle from prison by the angel is the subject of an old Italian painting, which has been considered to have much mer[illegible] over the altar. Various tombs and [illegible] chapels adorn different parts of the church.

EMIGRATION, (*e*.)

Account of the Number of Emigrants, specifying the Countries whence they came, and the Numbers from each, that arrived at Quebec during the Seven Years ending with [illegible] (Parl. Paper, *No.* 76, *Sess.* 1836.)

WHERE FROM	1829	1830	1831	[illegible]	[illegible]	[illegible]	[illegible]
England and Wales	3,565	6,799	10,343	17,481	[illegible]	[illegible]	[illegible]
Ireland	9,614	18,300	34,133	[illegible]	[illegible]	[illegible]	[illegible]
Scotland	2,643	2,450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hamburgh & Gibraltar	..	..	..	15			
Nova Scotia Newfoundland, West Indies, &c.	123	451	424	546	[illegible]	[illegible]	[illegible]
	15,945	28,000	50,354	51,746	[illegible]	[illegible]	[illegible]
					Grand Total	-	[illegible]

Account of the Number of Emigrants arrived at [illegible] from the United Kingdom, separating [illegible] England, Scotland, and Ireland, during the [illegible] ending with 1835.—(Parl. Paper, ut supra.)

YEAR	ENGLAND	IRELAND	SCOTLAND	[illegible]
1829	8,110	2,443	[illegible]	[illegible]
1830	16,350	[illegible]	[illegible]	[illegible]
1831	13,808	6 721	[illegible]	[illegible]
1832	18,947	[illegible]	[illegible]	[illegible]
1833	..	..	..	[illegible]
1834	..	..	..	[illegible]
1835	..	..	..	[illegible]
		Grand Total	-	[illegible]

Return of the Number of Emigrants from the United [illegible] in 1833, 1834, *and* 1835, *specifying the Colonies and [illegible] for which they cleared out, and the Numbers that [illegible] out for each.*—(Parl. Paper, ut supra.)

	Colonies in North America			United States of [illegible]		
	1833	1834	1835	[illegible]	[illegible]	[illegible]
England	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Scotland	[illegible]	4 964	[illegible]	[illegible]	[illegible]	[illegible]
Ireland	17,431	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Totals	[illegible]	40,060	[illegible]	[illegible]	[illegible]	[illegible]
	Cape of Good Hope			[illegible]		
	1833	1834	1835	[illegible]	[illegible]	[illegible]
England	516	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Scotland	1	1	..	[illegible]	[illegible]	[illegible]
Ireland	..	..	..	[illegible]		
Totals	517	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Total Number of Emigrants in [illegible] in 1835, 44,[illegible]

ENGRAVING. (*a*.) It is nearly [illegible] since the art of Engraving was discovered, [illegible] steady improvement may be discerned [illegible] time up to the present day. The [illegible] tury is rich in the productions of the [illegible] branch of the fine arts. From every [illegible] volumes are annually poured forth, [illegible] adorned in a manner which does indeed [illegible] quity appear rude. Men of genius are [illegible] themselves to the practice of the art, and [illegible] disdain to perpetuate and spread over the [illegible] by the burine, the inspired design which their [illegible] cil has traced. The noble works of the great [illegible] ters are now no longer the exclusive property of a single spot, or a few individuals. They are given to the world, literally published for the benefit of society, and sent abroad into every land, to delight the taste and to inspire the genius of all nations.

The art of engraving is not, indeed, to be ranked on a level with that of painting. The conception of a piece, the sentiment, moral, or event to be represented, the grouping of the figures, the imagination of forms and countenances, all that belongs to creative power, is displayed in the original design. But still there is left a work for the engraver, demanding a high order of talent. How laborious, delicate, and minute is his labour; how fine, how almost imperceptible, are the millions of strokes, to which the finest hair seems coarse; how infinite the gradation from the deep and dark shadows to the delicate touch, on which the ink is to be laid so sparingly that the black shall literally appear white! And yet how bold and decided must his touch be; life, and even a glow of fire, all the varied expressions of the "human face divine," all the spirit that can light up the most gorgeous painting, must be transmitted through the graver. And more than this. The engraver is often called upon to improve upon his copy; to give, perhaps, to the rude, hard outline of ancient and imperfect drawing the roundness, grace, and firè of life; to supply strength and boldness, to give dignity and sentiment, to inspire the quaintness of ancient art with the grace of a better period, and at the same time to preserve the gothic and sublime simplicity of the original. In addition to this, in most of the copies which engravers are called upon to make, they are obliged to diminish very greatly the size of the piece. And, in doing this, they must not only give a much greater degree of delicacy to the work, and devote much more time to minute detail, but they must carefully preserve the original proportions of the piece. Finally, the engraver must, merely by the management of his lines, convey, in some degree at least, the idea of colour. For engraving seems, in this respect, to be the point of meeting between painting and sculpture. It does not exclude the idea of colour, like statuary, which consults form alone. It does not, like painting, give the detail of colour. Yet it must convey the notion of different hues, because otherwise no small portion of its purposes would be unfulfilled. The variety of subjects is much greater for engraving than for sculpture. It is intended to represent familiar and domestic scenes. It is not confined to austere and dignified representations. It enters into every sphere of life, every occupation, from the splendid dramas of the palace and the gorgeous array of the church, to the interior of the hovel, the ale-house, and the stable. To exclude the idea of colour from such representations would destroy the effect. Yet this can be conveyed in engravings only by implication or suggestion; by so managing the width and direction the lines, that we suppose one colour to be represented in one place, another in another place, and so on. This power of the art is remarkably displayed in engravings of landscapes, in which the various hues of nature may be readily suggested to the imagination. All the varieties of foliage, even blossoms and flowers, the clear stream or lake reflecting the heavens, the gleam of the parting sun on the waters, even the gorgeous drapery of the sunset sky, may be pictured by this charming art. In speaking of the power of engraving, we must not omit to notice its beautiful adaptation to imitate that most difficult branch of painting, the representation of flesh-colour. Here engraving seems to achieve its highest triumph. Every variety of the appearance of flesh, the beautiful smoothness and delicacy of youth, the rough and wrinkled look of age, the hard and weather-worn visage of the seaman, the bright glow of childhood, and the softness of infancy, may be all conveyed by the engraver with scarcely less distinctness than in the finished painting.

Another very important and difficult office of the art is to convey, in the copies from paintings, a correct idea of the style of each great master; for the capacities of the art undoubtedly are sufficient for this purpose. In effecting this important object, it is obvious, that the engraver must be more than a mere copyist. It is not enough to imitate the outline and the shading, to preserve on a smaller scale the just proportions of the original, to convey a notion of the colouring, to give the same expression to countenances, and the same finish to all the detail. A higher order of talent is required in the engraver. He must be able to comprehend and appreciate the genius of the master, whose work is before him. He must understand the feelings which inspired him at the moment when he was pouring out his soul upon the canvas. He must know the enthusiasm that stirred him up, the profound sentiment that filled his heart, the devotion, piety, and ardour, with which he applied himself to the work. He must catch a spark of that heavenly flame, which burned in the soul of the great artist, and kindled into life the portraiture upon his canvass. In this way alone can he give to his work that nameless and ethereal charm, which, more than any thing else, distinguishes the works of genius.

These are some of the leading characteristics of the art of engraving; an art, which we consider perfect in its kind, that is, accomplishing all the objects which it professes to undertake, as completely as any of the fine arts. The editor of Horace Walpole's "Catalogue of Engravers" remarks, that "want of colouring is the capital deficience of prints." But we think he is entirely mistaken in this respect. Engravings, as we have endeavoured to show, do possess the property of colouring by suggestion, and this is one of the distinguishing beauties of the art. To colour a fine engraving, which is fully finished with all the depth and variety of shading, seems to us little less barbarous than to paint a fine statue.

The discovery of the art of engraving on metal, for the purpose of making impressions on paper, is generally ascribed to Finiguerra, a goldsmith of Florence. He excelled in an art, then much practised in Florence, called *niello*. It was the custom with jewellers, in those times, to engrave the outlines of Scripture subjects upon the vessels which they made for the use of the church. When this engraving was completed, they filled the lines with a black substance composed of a mixture of lead and silver, in solution with borax and sulphur; and impressions were taken from this in clay or sulphur. The black substance used was called *niello*; and hence the name of the art. The same process was also used when pieces of armour, household plate, and other articles, were engraved for the purpose of being inlaid with metals, wood, or ivory. Painters were employed to make designs for this kind of engraving, and impressions were taken in clay or sulphur, both for the convenience of the artist as he proceeded in his work, and for distribution among his friends. It occurred to Finiguerra, that the impression might be made on paper instead of clay; and he proceeded to make the experiment, wetting the paper and applying it gently with a roller. Impressions are still preserved in some of the museums of Italy, taken upon paper, and easily recognised by the inscriptions being reversed; and the Abbé Zani discovered at the Bibliothèque du Roi at Paris, in 1803, a print entitled "The first impression from an engraving by Maso Finiguerra in 1452." Some Italian writers, with considerable show of reason, place the epoch of Finiguerra's inventions as early as 1440, or a short time before. German writers claim the honour of the invention for a citizen of Antwerp, Martin Schoengaur, asserting that he practised the art before Finiguerra. It seems probable, that it appeared nearly simultaneously in both countries. The earliest distinguished engravers after the discovery of the art, however, were Italians.

It does not appear, that Finiguerra pursued his invention any further than to take impressions on paper instead of clay. A contemporary, of the same profession and city, Baccio Baldini, improved upon the invention by engraving on plates for the express purpose of taking impressions. He was greatly assisted by a distinguished painter, Antonio Pollajuolo, who furnished him with designs for his engravings, and also by another artist, Sandro Botticelli, who made a set of drawings, from which Baldini engraved plates for an edition of Dante, published in 1488, and supposed to be the first book ever embellished with copperplate engravings; though this notion has been proved false by a German writer.

The works of Baldini attracted the attention of a Roman engraver, Andrea Mantegna, who had already become distinguished as one of the most successful of the *niellatori*. This artist not only assisted Baldini with original designs, but also turned his own efforts to the promotion of the newly-discovered art, in which he soon became a proficient. Roscoe says of him, that his prints display considerable power of invention and expression of character, even bordering upon grace and elegance. The drawing is generally correct, and sometimes exhibits great freedom and spirit. His engravings are distinguished by the shadows being formed by diagonal lines, not crossed as in more recent prints.

In our notice of the early days of the art, we must not omit mentioning Albert Durer, one of the earliest Dutch engravers. Some knowledge of the art seems to have been previously possessed in Holland by Martin Schoengaur, who is thought by some German writers to have invented it, and who was certainly a contemporary of Finiguerra. The works of Martin, and his disciple Wolgemuth, inspired the genius of Albert Durer, who did much for the improvement of the art, excelling equally on copper and on wood. Among his most famous works are portraits of the Emperor Maximilian; of Albert, elector of Mentz; of Philip Melancthon; a full length of Erasmus, who is represented standing at a desk, writing; a head of Ulric Vambuler, of the size of life; and a portrait of himself. He also executed a series of engravings on wood, thirty-six in number, representing scenes from the life of our Saviour.

We have mentioned these prints, because they exercised an important influence on the career of a young Italian, who was now successfully cultivating the same art, and who was destined to carry it to a much higher degree of excellence. Marc-Antonio Raimondi was born at Bologna, and studied the art of painting with Francesco Francia. He was early distinguished for his works in niello, but seems to have made no attempts at regular engraving until his attention was directed to it by accident. Having taken a journey to Venice, he saw for sale the set of prints, by Albert Durer, representing the life of our Saviour. These prints were held in high estimation, and sold at a very great price; but the young artist was so much tempted by them, that he could not refrain from the purchase, though it completely exhausted his funds. In order to repair his fortunes, he immediately began to make copies of Durer's pieces, which he executed with so much success in copper, that he was able to sell them in Venice, as engraved by Durer. The latter, as Vasari tells the story, in his "Lives of Painters," on hearing of the fraud immediately repaired to Venice, and complained to the senate of the injury; but obtained no other satisfaction, than a decree forbidding Marc-Antonio from affixing to his prints the name or [illegible] of Durer.

From Venice, Marc-Antonio went to Rome, where he had the good fortune to become acquainted with Raphael, who was then residing there. Having made an engraving from Raphael's Lucretia, he caused it to be shown to the artist, who immediately perceived the great advantage which he should enjoy by means of this invention, in having his works spread over the world; and from that time Antonio found his chief occupation in engraving the works of this great master, receiving from him many useful hints and directions, so that the art was greatly improved by his labours. His reputation was soon established throughout Italy, and his school was resorted to by numerous disciples, among whom were Marco da Ravenna, Agostino Veneziano, and Giulio Bonasone, who were almost as accomplished and successful as their teacher, and did much to improve the taste of Europe.

The art was thus firmly established in Italy and in Holland. The first kind which was pursued was the *line engraving*, as would naturally be supposed, when we remember the origin of the invention. And it is worthy of note, that, although many other ways have been adopted for covering the copper, the earliest method is still used for the most costly and elaborate works. An account of the different modes of engraving will be found in the body of the Encyclopedia, under the proper head.

There is a species of engraving on copper called the *medallic*, which has been invented within the last twenty-five years, and is so beautiful a branch of the art that it merits a minute description. The object of this kind of engraving is, to give [illegible] representations of medals, coins, and [illegible] of a small size; and it is effected by applying a machine to the surface of the medal, which [illegible] trace a line on the copper corresponding [illegible] the outline of the figure on the medal. Those who are familiar with a pentegraph will be able to [illegible] an idea of this machine. It is so contrived, [illegible] as it slides over the surface of the coin, every elevation or depression which produces a perpendicular motion in the machine, causes at the same time a horizontal movement at the other extremity which traces the line on the copper. Every time the machine passes over the coin, a single line is traced on the copper; and there is a delicately contrived screw, by which the machine may be pushed forward after each line is drawn, so as to make the next line as near to it as the operator chooses. The effect is to give an exact copy of the medal; and the drawing appears so salient, that we can hardly convince ourselves, at first, that we are looking upon a flat surface.

In the "Journal of the Franklin Institute of the State of Pennsylvania," (Vol. X. No. 3, for September, 1832,) we find some account of the invention, in the following passage:

"In 1817, by the use of a machine which had been invented in Philadelphia, Christian Gobrecht, die-sinker, produced upon copper an engraving from a medal having upon it the head of Alexander of Russia; from this engraving impressions were taken and distributed. One of these impressions we have seen. In 1819, Asa Spencer (now of the firm of Draper, Underwood & Co., bank-note engravers) took with him to London a machine of the kind above alluded to, which was principally designed for straight and waved-line ruling. This machine was used in London during the year just mentioned, and the mode of ruling waved lines, and of *copying medals*, was then exhibited and explained by Mr Spencer to several artists."

This branch of the art has received great attention both in England and France. Mr Bate of London, took out a patent for a machine of this kind, in 1826, and has distinguished himself by the beauty of his medallic engravings. In 1830, a mechanician of Paris, Achille Collas, contrived a similar instrument, having taken the hint from a machine which was used for engraving watch-dials, cases, and snuff-boxes, called the *tour à guillocher*. And in 1834, a publication was commenced in Paris, under the title of "Trésor de Numismatique et de Glyptique," which has been published weekly ever since, each part containing four folio plates of medallic engraving, and a sheet of letter-press.

ENLISTING; is the act of entering voluntarily into the military service of the state. All persons enlisted for the land service of Great Britain, must go, within four days, and not sooner than twenty-four hours after enlistment, along with an officer or soldier of the recruiting party, before a justice of the peace, or the chief magistrate of the place of enlistment, not being an officer of the army; and on that occasion the person enlisted is entitled to declare his dissent to the enlistment, and, on his returning the enlistment money, and paying twenty shillings for charges, and defraying any other expense he may have occasioned, he will be forthwith discharged. If he fail, within twenty-four hours after declaring his dissent, to return and pay money, he is to be held as enlisted; and, in case, or if he voluntarily enlists, the magis- must then read, or cause to be read, to the it, the 3d and 4th articles of the second sec- and the 1st article of the sixth section of the les of war; and thereafter administer the oath elity, and certain other oaths contained in the ny act. The magistrate certifies the enlisting swearing, and the other particulars required by utiny act; and if the recruit refuse to take ath of fidelity, the officer may detain him till ake it. In case the recruiting party has the place, or if, from any other cause, an offi- r soldier of the party cannot be found, the recruit may go by himself before the magistrate, within four days after enlistment, and before taking the oaths, and declare his dissent, and deposit the money in the hands of the magistrate. Persons receiving enlisting money, and absconding, or refusing to go before the magistrate, are held duly enlisted. If apprentices enlist, and state to the magistrate that they are not such, they may be punished by the judge ordinary for fraud, and, on expiration of their indentures, are liable to serve in the army. If they are bound for four years their masters, in Scotland, may recover them under certain conditions detailed in the mutiny act. If the master consent to the enlistment, he is entitled to part of the bounty. Servants enlisting before the expiration of the term of their engagements are, under the mutiny act, but not at common law, held to be validly enlisted, and are entitled to wages up to the date of their enlistment. Such are the usual provisions of the mutiny act on this subject; but, as that act is renewed annually, variations may occur; so that it is proper, on all occasions, to consult the existing act. By 9 Geo. II. c. 30, and 29 Geo. II. c. 17, it is declared a capital felony for any British subject to enlist as a soldier with any foreign state without her Majesty's leave; or for any person to procure a British subject to enlist, or to retain or hire him with intent to make him list, or procure him to embark or go beyond seas to be so enlisted; and this whether enlistment money has been paid or not. By 1 Vic. c. 29, the enlistment of foreigners into the British service is permitted, provided that, in any regiment, battalion or corps, their number shall not exceed the proportion of one to fifty, of natural-born subjects.

ENNIS; the county town of Clare, Ireland, is situated on the river Fergus, eighteen miles N.W. from Limerick, and 111 S.W. from Dublin. It is irregularly built, both the new and old parts of the town being scattered and ill-defined. It carries on a considerable trade in corn, butter, and other provisions. These are chiefly shipped at Clare, about two miles distant. Population in 1831 within the new electoral boundary, 9747.

ENNISCORTHY; a town in the county of Wexford, Ireland, situated on the river Slaney, sixty-two miles S.W. from Dublin. It has a picturesque appearance, but the streets are in general narrow and inconveniently steep. The chief trade of the place consists in the exportation of agricultural produce to Wexford, eleven miles distant, and also by land carriage to Waterford. In 1798 the town was besieged and plundered by the insurgents, who were ultimately defeated at Vinegar Hill in the vicinity. Population of the entire town and parish of Enniscorthy in 1831, 5955.

ENNISKILLEN; the chief town in the county of Fermanagh, Ireland, is situated on an island in the narrowest part of Lough Erne, eighty miles N.N.W. from Dublin. The site, accessible only by two opposite bridges, renders it very defensible, and enabled it to make its noble stand against the army of James II. The bravery displayed by the "Enniskillen men" on that occasion, led to the formation of the regiment of cavalry well known in our military annals by the name of the "Enniskillen dragoons." The town is in general well built, and besides the usual public buildings of an assize town, has a large infantry barrack, an artillery barrack, and two small forts. The chief trade is in timber, coal, and slate, imported from Ballyshannon to Belleek. A considerable trade in corn is also carried on, and the place forms the chief retail market for a large surrounding district. Population of town in 1831, 6796; of parish of Enniskillen, 13,777.

ENTOMOLOGY, (*a*.) The last twenty years have done much for the science of Entomology, in its nomenclature, in the addition of species of insects, and in their systematic arrangement, and, more than this combined, in rendering it a favourite and popular science, by the dispersion of prejudice and the diffusion of a taste for the investigation of objects so replete with all that can prove attractive. It seems hopeless to endeavour to arrive at any satisfactory conclusion relative to the probable number of the species of insects spread over the earth. Various calculations have been made, the discrepancies of which are perfectly ludicrous, if we view them without reference to the circumstances and data whence they were deduced. It appears plausible to argue from the materials in hand, namely, from any assiduously elaborated Fauna, upon the relative numbers of the different orders; —for some, the Coleoptera and Lepidoptera have been very generally the favourites, and consequently more carefully and universally collected than either of the other orders; but still the result will be far from conclusive, for such a Fauna will necessarily be of a country seated within the temperate zones; and to conclude thence upon the relative numbers of the orders within the tropical regions, and of countries so differently circumstanced both in climate and geological structure, is merely to hazard conjectures without the least hope of even an approximation to the truth. The data whence they must proceed are exceedingly incorrect; for the number of the two orders which should form the basis of the calculation have not, in those regions, been yet so nearly ascertained as to enable us to form a clear idea, the minute species having been hitherto very much neglected. It has been generally supposed that small insects are rare within the tropics and tropical climates, from their seldom being sent to Europe. That the reverse of this is closer to the truth, is clearly shown by a fact mentioned by Reich, who says that he commissioned two friends, one residing at Rio Janeiro and the other at Buenos Ayres, to collect all the minute Coleoptera they could find, and that, in consequence, he received from the latter place a four-ounce bottle filled with spirits, which contained 1200 minute insects, among which there were 116 new species— and from Rio a very small box, holding 216 impaled beetles, comprising 102 species, almost all of which were new and unknown—and from the same locality a half-ounce pill-box, which held 621 loose insects, consisting of more than 100 new species as small as any found in our more northern countries. It must be remarked, that in both instances they were collected at a very unpropitious time of the year, in the course of a few days, within a limited space, merely as specimens to ascertain if they were what the European friend desired; whence it is easy to conclude that they were not captured by Entomologists, who would necessarily have been aware of the interest attached to what they sent, and consequently, as well as knowing better where to seek, they would, in the same space and time, have caught probably five times as many. We may therefore consider, that minute species are as abundant in proportion to the larger ones within the tropics as they are in the colder regions; and if so in the Coleoptera, why not in the Lepidoptera, and then in their parasites, the pupivorous Hymenoptera and the parasitical Hymenoptera in general, which we know to be almost innumerable in Europe and in our own country, from the hosts already described by Gravenhorst, Nees, and our two able and assiduous compatriots, Messrs Walker and Halliday? The Diptera also will necessarily abound. Looking thence to the other orders, we do not feel so much astonished at the calculation made by Reich, who estimates the number of the species of insects at possibly a million. The magnitude seems vast; but compare it with the number of individuals of a single species frequently observed; the myriads of minute gnats occasionally seen sporting over pools and under trees; the infinite hosts of ephemera that by myriads of millions emerge, at a certain season of the year, from some of the rivers of France, as described by Reaumur; the clouds of locusts, which even intercept the rays of the sun, and devastate whole provinces, and in the course of a few hours transform a smiling and fertile country into a wild waste and desert, threatening its whole population with famine; the innumerable plant-lice which devastate our hop-grounds, and their enemies the lady-birds, which have been taken up by pailfuls upon our coasts, and have completely covered the sea at some distance from land; and the number of the inhabitants found in the bee-hive, the ant-hill, and the white ants' nest. If nature, in frequent instances, has rendered species thus prolific in individuals for peculiar purposes, can we rationally doubt her capacity of being equally fruitful in the production of species, when we take into consideration the important variety of their functions, and the very varied nature of soil and temperature, of heat combined with humidity and dryness, and the dissimilitude of organization resulting from these differences of combination; and when we reflect that in our own country every day almost adds to our indigenous tribes, although they have been assiduously collected for many years past,—a million therefore appears to us to be no exaggerated calculation of their probable number.

Their geographical and local distribution also are points to which very considerable interest attaches, the former being indicative of the effect of climate and temperature upon form, as well as showing how widely nature spreads some for certain purposes; whereas she adopts the use of analogical form and structure in other instances, clearly showing, by this variety, that a difference of situation is required where we do not perceive even the modification of its action; whereas their local distribution is evidently very intimately connected with their instinct and economy—in fact, wholly influenced by them. The science possesses some very valuable but partial contributions to both. It is merely necessary to indicate Klug's descriptions of some insects from Java; M'Leay and Horsfield's Annulosa Javanica; Savigny's admirable plates in the large work on Egypt, which, if we possessed the descriptions to the figures, would not be surpassed in the annals of entomology; Palisot de Beauvois' Insectes Récueillis en Afrique et en Amérique; Spix and Martius' Delectus Animalium Articulatorum, and, as an example of assiduity and labour, displaying the richness of the Fauna Insectorum of a single country, we should look in vain for a more valuable one than is to be found in Stephens' "Illustration of British Entomology."

Our systems are essentially artificial, and long remain so; but this is very immaterial if they facilitate the ready recognition of described species. The value of a system in the present state of our knowledge must be limited to that object, that there may be no difficulty or error in recording, in connection with the identical species, whatsoever observations—whether anatomical, physiological or economical—may have been made upon it. A true natural system must be founded upon such a mass of knowledge that we can never hope thoroughly to possess it; for even when we shall have arrived at an intimate acquaintance with their external and internal organization, much still remains to be done. Something may be contributed by analogy, but which it is not safe to trust to until fully confirmed; for nature is frequently apparently eccentric, from the impossibility of our arriving at correct conclusions as to the relative effects of the complicated combinations of organization, and their mutual dependence upon the instincts and habits of the creatures. Indeed, in those systems which are most profuse in their professions of adhering to nature, we remark the strange incongruity of no value being given to instinct; and that creatures with instincts limited to self-preservation and the propagation of the species, assume an undue superiority, from the mere circumstance of having an organ or two more elaborately constructed in the mouth, over such as possess a highly developed instinct, and live in a peculiarly organized social state, which necessarily implies the power of communicating ideas and a certain degree of ratiocination.

It is here perhaps the most convenient place to take a cursory notice of the doctrine of circular affinities, intended to supersede, as more natural, the older one of linear gradation, in the distribution of organized beings. Mr M'Leay, the celebrated author of this system, conceives that the arrangement must be made in a series of circles, ach composed of five groups, which are the affinities, and the corresponding groups of the approximate circles the analogies of organization; and by his means the whole series of created beings are inked together in closer connection than by any ther mode of distribution. The idea is exceed- ngly attractive; but although it apparently in some stances fulfils our expectations, yet in others the istortions are so palpable, that we are surprised hat the learned author himself seriously adopted . The different combinations and structure of rgans very distinctly produce a reticulation of re- tions; but to circumscribe nature within a circle, d that circle composed merely of five members, to straiten her capacity too closely; for she, to e the words of Huber, "*a varié a l'infini ses com- naisons.*" The most obvious mischief produced the promulgation of such doctrines is to withaw ardent and enthusiastic minds from the la- rious and steady observation of nature—from ich alone we can derive true knowledge—to the rsuit of a phantom, which, when overtaken, lts in our arms.

In connection with our observations upon system, may here remark upon the apparently ambi- ous division of genera, with respect to the num- r of species they contain, and which scarcely ac- ds with the precision and steady progression of ure, and is, perhaps, strong presumptive evidence all but specific separation being unnatural. It possibly be argued that their function in the versal economy requires it, from nature varying her usual mode of making a species excessively prolific where she requires a more powerful action; and to that effect, which only a certain organization can produce, she is limited, by causes which we are unable to investigate, in her power of executing by means of one agent, and consequently has recourse to several species to enable her to perform what, in other cases, under different circumstances, she can do by means of one alone; but this, although the best reason which occurs to us, is very vague, and far from satisfactory.

The progress of Entomology has been accelerated chiefly by the revision of the systematic arrangement, and its improved distribution into families, by the vast addition of species constantly making, and the many valuable monographs with which the science has been enriched. It is utterly impossible that we should here enumerate the multiplicity of works that have been published upon the subject. Those of Latreille, whom the science has so recently lost, will always necessarily rank pre-eminent among them. It was, doubtless, by the impulse given by his labours, that the science has advanced to its present state of comparative perfection. He was the first who indicated the distribution of insects into families, in his "*Precis des Caracteres Generiques,*" from which time, in each subsequent work, he has progressively remodified and improved it, up to the publication of his "*Familles Naturelles,*" in 1825. His portion of the second edition of Cuvier's "*Regne Animal,*" published in 1829, presents us with the best general synopsis of the science, up to the date of its publication, that we yet possess. The science will long deplore the loss of Illiger and Leach, whose early labours gave such earnest of future valuable service. We must not omit to notice among the benefactors of the science, our venerable Kirby, and that joint labour of love, his and Spence's "Introduction to Entomology," which, perhaps, more than any other work ever published, has tended to make votaries to its study. M'Leay's name, also, will necessarily occur, to whom, if even his theories are not adopted, we must feel grateful for the utility of his practical labours. We must not, either, omit mentioning Gravenhorst, for the sake of his labours upon the Staphylinidæ, and his great work, the "*Ichneumonologia Europæa,*" which he had in progress for twenty-five years, and which contains 2914 8vo. pages, and the description and scientific arrangement of 1288 insects of a tribe, the impracticable nature of which was previously insurmountable to every individual who attempted them. Nor must we forget Meigen for his systematic description of the European Diptera, which cost him fourteen years' labour. In its anatomical and physiological departments, the labours of Straus-Durckheim, Chabrier, Leon Dufour, Audouin, Marcel de Serres, Carus, Treviranus, Müller, Suckow, and a multitude of others, dispersed throughout the numerous periodicals and transactions of the various scientific societies, have done much to illustrate the subject.

EOCENE PERIOD; one of the divisions of the tertiary epoch, according to Mr Lyell's system, from ἠὼς, *aurora*, and καινὸς, *recens*, the commencement or dawn of the existing state of the animate creation. It includes, of *Marine* beds, the Paris and London basins; *Freshwater* beds, alternating with marine, in Paris basin, isle of Wight, Cacurbrine in Auvergne, Cantal and Velay; and the oldest volcanic rocks in Auvergne. Of 1238 fossil shells which have been ascertained in this formation, only forty-two are of living species, or about 3½ per cent. None of the associated remains of the mammalia found in these deposits belong to living species; about forty belonged to the division Pachydermata, which has now only four living representations on the globe.

EPWORTH; a market-town and parish in Lincolnshire. 160 miles N.W. from London. The chief employment of the inhabitants is in the dressing of flax, large quantities of which are grown in the neighbourhood. The parish is the birth-place of John Wesley, the founder of the Methodists. His father held the rectory of it for about sixty years. Population in 1831, 1825.

ERASTIANS; a party in ecclesiastical polity, who maintain that the church possesses no power in itself, and that the office of her rulers consists solely in instructing and persuading the people; that all they have a right to do, is to propose truths to be believed, and duties to be practised, which they may enforce by motives calculated to impress their consciences and hearts; but that they have no authority to call them to account for their conduct, and to deprive such as they deem unworthy, of their privileges. Such authority churches have possessed, and still may possess, but only as having it conferred by the civil power, or being tolerated by it in the exercise of an assumed right. Such authority a state may confer upon the church, for the purpose of maintaining due order in society, but it then only delegates what it has at all times a right to limit and control, and even to recal. And if a church shall, without such formal delegation, assume powers of government and discipline, it is an usurper, and unwarrantably encroaches on the authority of the magistrate; for the power of the sovereign is supreme in things both temporal and spiritual. These are the leading doctrines of Erastianism. Erastus promulgated them during the sixteenth century, chiefly at Heidelberg, and in his *Theses* and *Tractatus de Excommunicatione*. He was a physician, but devoted much of his attention to theology. His boldness in the interpretation of scripture, is as remarkable as his ingenuity in deriving arguments from natural law, and the principles of jurisprudence. The passage in Matt. xviii. 17, which apparently contradicts his favourite doctrine, he without difficulty interprets in a way confirmatory of it. The church, he says, means the assembly of the Jewish elders, the only legitimate magistracy among the Jewish people; and the verse just means that if private methods of getting justice failed, they were to carry the case before a Jewish tribunal; and if the culprit was obstinate, and refused to yield to the determination of such a court, he was to be treated as a heathen would be, and dragged before the Roman authorities.

Erastus never founded a sect, but his doctrines found patrons in many churches, and with the generality of princes. L. Molinæus was the most violent of the authors who have written in defence of them. To a certain extent they are acted upon in the church of England; and in opposing them the church of Scotland engaged in some of her most perilous struggles, and shed not a little of her best blood. The Reformed churches have loudly testified against them; but the Lutheran churches tamely yielded up their independence, and submitted to the Erastian yoke of the civil power. The consequences of what thus took place in these last named churches have been described by Dr Mosheim, who in general seems inclined to act as their apologist, and to explain away or conceal the evils to be found in them. Yet in this case the picture he gives is unfavourable. After describing the inroads and final triumph of Erastianism, he adds: "Nor will it appear surprising, when this is duly considered, that the manners of the Lutherans are so remarkably depraved, and that in a church which is deprived of almost all authority and discipline, multitudes affront the public by their audacious irregularities, and transgress with a frontless impudence, through the prospect of impunity."

Erastus brought forward his doctrines as an effectual check to the tyranny of the church of Rome, and to that imitation of it which was to be found among Protestants. His doctrines, however, have never been properly systematized. Some hold that all established churches are necessarily chargeable with Erastianism; and among polemics, it is bandied about from one party to another as a term of reproach. It is not to be wondered at that there are few churchmen inclined to speak favourably either of the name or of the thing signified by it. See *Turrettini Theologia*, *loc.* 18. *quæst.* [illegible] *Limborch Theologia*, *lib.* 7. *cap.* 18. *Dick's Lectures*, *vol.* iv. *p.* 385. *Mosheim*, *cent.* 16. *chap.* I.

ERRATIC BLOCKS, OR BOULDERS. Detached fragments of rocks, generally rounded and transported from a distance, are found in great numbers scattered over the earth's surface, and embedded in the diluvial covering. They vary in size, from a few pounds weight, to several tons. These masses are frequently accumulated near the mountains from which they have been originally detached, but they are as often found scattered over districts at a distance, and various fragments of different rocks will thus be found accumulated and mingled together sometimes at distances of many hundred miles from their parent rocks. These transportations point out the agency of currents, and immense [illegible] of the ocean, passing over the land in particular directions, and with such impetus as to transport large and ponderous bodies. From the position of these boulders, the direction of such currents may often be distinctly ascertained. Thus in the valley of Mid Lothian, fragments from all the hills to the north westward are found accumulated on the south-eastern shores of the firth. In Switzerland immense granite blocks from the Alps rest on the limestone strata of Mount Jura, and fragments from the Scandinavian rocks in the north are in great numbers strewed over the south of Europe. The same indications of a transport of boulders from north to south, is also to be seen on the continent of America. When fragments of rocks have been surrounded with ice, and a thaw has taken place, they have been thus rendered so buoyant as to float in water, and in this manner partial transportations of boulders may be accounted for.

ESCARPMENT; a geological term for the abrupt face of a ridge of high land; from the French *escarper*, to cut deep.

ESQUIMAUX, (*a.*) The Esquimaux are extensively spread. Richardson and Franklin traced them along the whole coast of the American Polar Sea; Kotzebue in the channel near Behring's Straits. Their stature is much lower than the European, five feet nine inches being considered gigantic; the usual height is from four to five feet. Though the trunk of the body is thick, the [illegible] mities are small, especially the hands and feet, and the fingers very short. The face is broad and flat, and the nose small, and sunk very deep: this would appear to be caused by the muscles of the face being drawn in from intense cold. The females have a fresh and good-natured expression of countenance. Their dress is very simple. That of the men is of a double coat of deer skin, with the hair inwards; at one end a hood is formed, and raised over the head; trowsers of the same, also double, falling over the boots which extend to the knee, which are of deer-skin or of the hide of the walrus or seal. The dress of the females is very similar: they are, however, distinguished by their boots,—so capacious, as to make each leg appear as large as the body, and to give them a waddling gait; these boots form a receptacle for all the nick-nacks that may come into the possession of these fair orders of the north; and, in fact, answer the purpose of a "*reticule.*" Captain Parry states, that they were originally used for a receptacle for children, but that of late a new fashioned hood has been introduced.

Their clothes are sewn together with the thread consisting of the sinews of animals; they arrange their dress with some taste; and, from the rich *variety of* furs, the most showy of which the ladies turn into borders, they, on gala days, make a splendid appearance. But the taste of some was *not so good*; in lieu of beads they sometimes form ornamental girdles of the teeth of the fox, wolf, or musk ox; and one, to be finer than the rest, had *fringed her* jacket with a long row of *foxes' noses*: these were however suspected to be regarded as amulets or charms. To complete their beauty, the women paint their skin by drawing a needle under the epidermis, with a thread dipped in lamp-black and oil; and after sewing and drawing out the needle, and pressing the part, it leaves a permanent olive tint.

Hunting is the only resource of these poor people; they pass their whole lives in adventure, which forms a determined character. When not able to procure wood or iron, their ingenuity turns he bones of animals into their implements; and heir cord or line is formed by cutting the toughest nd most elastic skins into long strips. The short eriod of summer is employed in shooting the deer ith bow and arrow, the flesh of which for eating, nd the hide for clothing, they highly esteem. The ider and other wild ducks also furnish them with od, and their skins, with feathers inwards, are sed as clothing also. Winter drives all the ani- als to the south, and then these people are forced subsist from the products of the river—the seal, e *walrus*, and the whale—which are obliged to cend to the surface for respiration. In a soli- ry snow shed, erected on purpose, they watch, d *immediately* the animal is visible, strike a dart harpoon with a line attached. When struck, it nges into the water, but forced to return at in- rvals, is again attacked, till, by loss of blood and igue, it becomes an easy prey. With a band of gs, a single Esquimaux will attack a polar bear; e dogs keep him at bay, while the master, advan- g with a spear, and avoiding with incredible lity the springs of the bear, pierces him repeat- y, till, exhausted, he falls and dies. Nooses, ings, and traps are also used to catch birds and es. Immediately a walrus or other sea monster aken, shouts are raised throughout the village huts, when they all come out, and immediately it is brought before them, slices are cut out, and every lamp has a fresh supply of oil; the huts are in a blaze of light; all the pots are filled with the flesh, and the women begin cooking, occasionally picking out a dainty morsel for themselves; the feast is now prepared, when, seated round, one man takes up a larger piece, and severs, with his teeth, as much as he can get into his mouth, and then passes it to his neighbour, and so on all round till it is consumed, and a fresh piece is supplied: they will sometimes devour the whole of the animal at one sitting. A youth, named *Toolooak*, is said to have eaten in the Fury, within twenty-four hours, ten pounds four ounces of solid food, a gallon and a pint of water, with more than a pint of soup. Captain Lyon, however, thought *Kanzara*, another native, possessed more capacity of stomach; in nineteen hours he finished nine pounds fifteen ounces of solid, and a gallon and a half of fluid. Such are the appetites of those people, and so improvident are they, that the most ample stores soon disappear; one day they are labouring under all the evils of repletion, and a few days after they are without food.

Their intellectual faculties are not, of course, much developed; they cannot count beyond ten, and can form no abstract ideas; but in the mechanical structure of their huts and implements, they display great skill; from constantly migrating, they have a good notion of delineating geography; they are very humorous, and fond of mimicking. The first winter they appeared to be honest in the extreme; but, after two or three winters, being accustomed to see pieces of iron, tin pots, and pieces of wood and planks, lying about, all to them, as gold and jewels to the people of the south, they, by degrees, yielded to the temptation of pilfering; this may, however, in some degree be excused, after they discovered that in their early intercourse with the strangers, skins and furs of great value had been exchanged by them for beads and other articles of little value; for among themselves the greatest integrity appeared to be observed, their sledges and implements of hunting being left outside their huts without any suspicion of their losing anything. Hospitality was a virtue they also possessed; the strangers from the south were admitted freely into their huts, and the women waited upon them with the greatest attention, setting the best food they had before them, as well as mending and drying their clothes. "The women working and singing, their husbands quietly mending their lines, the children playing before the door, and the pot boiling over the blaze of a cheerful lamp," presents a scene of civilized happiness little imagined to exist in such desolate regions, and cheering in the highest degree to the wandering voyager.

Their religious customs are curious; their principal deity is called *Aywillaiyoo*, being the figure of a female of gigantic stature, having only one eye (the left), and a *pigtail* reaching to the knees, and so large that both hands can scarcely grasp it. Captain Lyon was present when *Toolemak*, their chief magician, summoned *Aywillaiyoo* to the upper world to utter her oracles. They were all assembled in a hut, and light after light was extinguished till total darkness prevailed. Toolemak, with incantations, then pretended to descend to the world of spirits to bring up the oracle. Shortly afterwards a low chaunt was heard, supposed to be the voice of *Aywillaiyoo*. For half an hour, screams and questions were uttered by her votaries, and even replied to in mystical answers, after which the sound died away, and she was supposed to disappear, when Toolemak cautiously announced his return to the upper world. The magician was taken on board one of the vessels, and, after being heated with nine glasses of *hot water* (brandy), influenced by the spirit, began to act over again; when it appeared by various modes of applying the hand or jacket to the mouth, he produced those sounds which had passed off for the incantations of *Aywillaiyoo*. This deity is supposed to have a father, who is a giant with one arm. The Esquimaux also have a more familiar spirit, called *Pamiooli*, a kind of Mercury among them frequently invoked; they likewise mention a large bear, which they say inhabits the centre of the ice, and sometimes holds converse with them. They, however, believe in a future state, in which, as usual among savage nations, they imagine the senses will be completely amused. They believe that the soul passes through different abodes, first into a state similar to purgatory; that the good spirits pass through them, and find their state continually improving until they reach a spot *where the sun never sets*, and where, with plenty of water and a beautiful country by the side of lakes which never freeze, the deer roam in vast herds, and the seal and the walrus abound. Such is with them the perfection of bliss.

Captain Parry gives the following description of the manner in which the Esquimaux dogs draw the sledge:

"When drawing a sledge, the dogs have a simple harness (*annoo*) of deer or seal-skin, growing round the neck by one bight, and another for each of the fore-legs, with a single thong leading over the back, and attached to the sledge as a trace. Though they appear at first sight to be huddled together without regard to regularity, there is, in fact, considerable attention paid to their arrangement, particularly in the selection of a dog of peculiar spirit and sagacity, who is allowed, by a longer trace, to precede the rest as leader, and to whom, in turning to the right or left, the driver usually addresses himself. This choice is made without regard to age or sex; and the rest of the dogs take precedency according to their training or sagacity, the least effective being put nearest the sledge. The leader is usually from eighteen to twenty feet from the fore part of the sledge, and the hindmost dog about half that distance; so that when ten or twelve are running together, several are nearly abreast of each other. The driver sits quite low, on the fore part of the sledge, with his feet overhanging the snow on one side, and having in his hand a whip, of which the handle, made either of wood, bone, or whalebone, is eighteen inches, and the lash more than as many feet, in length; the part of the thong next the handle is platted a little way down to stiffen it, and give it a spring, on which much of its use depends; and that which composes the lash is chewed by the women, to make it flexible in frosty weather. The men acquire from their youth considerable expertness in the use of this whip, the lash of which is left to trail along the ground by the side of the sledge, and with which they can inflict a very severe blow on any dog at pleasure. In directing the sledge, the whip acts no very essential part, the driver for this purpose using certain words, as the carters do with us, to make the dogs turn more to the right or left. To these a good leader attends with admirable precision, especially if his own name be repeated at the same time, looking behind over his shoulder with great earnestness, as if listening to the directions of the driver. On a beaten track, or even where a single foot or sledge-mark is occasionally discernible, there is not the slightest trouble in guiding the dogs: for even in the darkest night, and in the heaviest snow-drift, there is little or no danger of their losing the road, the leader keeping his nose near the ground, and directing the rest with wonderful sagacity."

EUPIONE; (from εὖ, good, and πίων, fat, or oil.), a highly volatile and inflammable liquid, extracted from oil of tar by repeated rectifications, aided by the action of concentrated sulphuric acid. It has the lowest specific gravity of any known liquid, viz., 0·65. When pure, it burns without smoke, and with a very brilliant white flame.

EVESHAM; a borough-town in Worcestershire situated on the banks of the Avon, ninety-five miles N.W. from London, and sixteen S.E. from Worcester. Gardening forms the principal employment of the inhabitants, the vale of Evesham being noted for its fertility. Stocking-weaving is also carried on to some extent. Evesham is noted in English history as the site of a battle fought on the 6th August, 1265, between the forces of Henry III., commanded by prince Edward, and Simon de Montfort, earl of Lincoln, which issued in the defeat of the earl, and the release of the king and his reinstatement on the throne. Population in [illegible], 3991.

EXCISE, (*a*.) In consequence of the injurious interference of the excise regulations with the processes of many of our manufactures, that branch of national taxation has lately undergone considerable investigation. On the 27th March, [illegible], Sir Henry Parnell, Bart., Henry Berens, and Henry Lewis Wickham, Esqrs., were appointed commissioners, to inquire into the establishment of the department of excise, and into the management and collection of the excise revenue throughout the United Kingdom. On the 26th July, [illegible], the commissioners made their first report, and on the 12th July, 1836, their twentieth and last. Their secretary, Mr T. C. Harrison, has since made a *Digest* of these twenty reports.

Many of their suggestions have been already made the subjects of legislative enactments, viz. 1. The abolition of the surveys and permits, as regards tea, wine, and tobacco. 2. The modification of the survey of brewers. 3. The repeal of the duties on stone bottles and sweets. 4. The limitation against shipping spirits from Scotland in less quantities than eighty gallons reduced to twenty gallons. 5. The reduction of duty on spirits in Ireland, from 3s. 4d. to 2s. 4d. per gallon. 6. The repeal of the duty on starch, and the relief of the manufacturers from excise regulations. 7. The reduction of the duty on flint glass from [illegible] to 2d. per lb. 8. The consolidation of the two classes of paper into one, with one rate of duty. 9. The duty on first class paper reduced from [illegible] to 1½d. per lb., being the amount payable on second class paper. 10. Consolidation of the separate classes of pasteboard, subject to one duty [illegible] 14s. per cwt. 11. Repeal of duty on stained [illegible]

The following reductions have also been [illegible] in the establishment and expenditure of the [illegible] department, in consequence of the adoption of the recommendations of the commissioners, [illegible] wholly or in part, under these several heads, viz. [illegible]

	No. of officers.	Amount of salaries, per annum. £	s.	d.
On the abolition of duties on starch, stone bottles, and sweets	7	680	0	0
On the modification of the survey on tea-dealers	142	14,967	5	0
On the abolition of the survey on wine-dealers	40	4,033	5	0
On the modification of the survey on brewers	84	8 440	0	0
	273	£28,120	10	0

There are ten articles which are now the subjects of excise taxation, viz.:—

1. Spirits.
2. Malt.
3. Hops.
4. Paper.
5. Soap.
6. Glass.
7. Bricks.
8. Vinegar.
9. Auctions.
10. Licenses.

The commissioners consider the three first articles—spirits, malt, and hopes—as *luxuries*, and as a class of articles affording one of the least objectionable sources from which this species of taxation can be supplied. But they regard the five succeeding articles, namely, paper, soap, glass, bricks, and vinegar, as articles of *useful manufacture;* and consider that a tax imposed on them is liable to the strongest objections. Instances are given of the *injurious* effects which the excise regulations produce, by interfering with the ingenuity, skill, and resources of the manufacturer.

To facilitate the great labours which devolve upon the excise establishment in the charging and collection of this branch of the revenue, the country is partitioned into convenient portions, in each of which is organized a certain number of the officers of excise of various ranks, who perform the necessary duties of charging the duties, of supervising the operations of excise traders and manufacturers, and of collecting the duties within the circuit allotted to them. England and Wales are divided into fifty-five great parts, which are known under the name of "collections." Some of these extend into several counties, and all are more or less limited according to the density of the population. The name of a county, a large portion or the whole of which is comprised within their limits, is given to some collections; and others are known by the name of some great town which they contain. Wales is divided into four collections. The London collection, which includes the district within the limits of the chief office, is placed on a different footing from the country collections, in consequence of this contiguity, and also of the magnitude of its operations.

Each collection is divided into districts, usually into six or seven, though there are four collections which only contain four districts, and on the other hand the Leeds collection contains eight. The total number of districts in England and Wales is [illegible]5. Each district again is subdivided into rides and foot-walks, or divisions. A ride comprises a tract of country in which the traders are thinly scattered, and the officer is required to keep a horse. The number of miles travelled daily by a ride officer is not less than eighteen on an average. In towns, the circuit which contains so many excise traders and manufactures as require the constant attention of one officer, is necessarily circumscribed, and, therefore, as it can most conveniently be visited on foot, it is termed a foot-walk or division. Wherever the population is dense, there will always be a sufficient number of traders and manufacturers residing within a short space, and whose operations require to be constantly surveyed, as to render the foot-walk a more convenient division than the ride. A foot-walk never exceeds a circuit of sixteen miles, as the officer would then require a horse.

The chief officer of each collection is the collector, who is allowed a clerk; and in two or three collections more than one clerk is required. The supervisor is in charge of a district, and is the next officer in point of rank, and afterwards come the ordinary surveying officers. There is always one supernumerary in each collection, and in many there are officers called assistants and expectants.

The business of the collector is to attend each market-town in his collection eight times during every year, to receive the duties payable in the town and neighbourhood. He is attended by the supervisors and officers, and examines the diaries kept by the former, which contain an account of the daily occupation of their time, and a statement of such errors and omissions as the supervisor may have discovered on the part of officers. The collector hears the explanations of the officers, and writes his own view of the case in the same diary, to which the supervisor and officers put their initials if they agree in the view taken by the collector; and if they do not agree, they are required to state the grounds of their dissent in writing. The use made of these diaries will be subsequently noticed. The proceedings of the collector operate as a check upon the supervisor, and the latter is a check upon the subordinate officers. The collector is also employed in hearing information, and he is also required to pay the out-pensioners of Chelsea hospital. An allowance is made under the head of sitting expenses, in order to provide for the extra payments which he is called upon to make when on his rounds. In 1835 these expenses amounted to £20,000.

The supervisor has charge of a district, comprising a certain number of ride and division or foot-walk officers, whose proceedings he constantly checks by surveying, at uncertain times, the same premises. He examines their accounts, keeps a diary, in which he inserts the particulars of his own surveys and the errors which he may have discovered in the calculations of the surveying officer. Supervisors are often occupied fifteen hours a day; and when on duty in a riding district, the number of miles travelled daily averages twenty-three. The labours of the supervisor are both arduous and multifarious.

The class known as officers constitutes the chief strength of the surveying department. They are employed to survey the excise traders and manufacturers either in a ride or a foot-walk. The manufacturers and traders give notice to the officer whenever they are about to commence an operation which demands their attendance, and he must be on the premises at whatever hour may be fixed. The officer is frequently on a survey at three o'clock in the morning, or as late as ten or eleven at night. He not only takes accurate surveys of manufacturing processes, but is called upon to keep an account of the stock of every dealer in exciseable articles within his circuit. It is of the utmost importance to all who are subject to the excise laws, that the officers entrusted with their execution should discharge their duty so as to cause as little annoyance and inconvenience as possible; and it is right to state that they generally succeed in accomplishing this object, acting with impartiality towards all parties. Every officer is subject to a most rigorous system of inspection by the supervisor under whom he is placed. Before going out on each day's survey, he is required to leave a memorandum behind him, specifying the different places he is about to visit in the course of the day, and the order in which he will visit them. It is the business of the supervisor to make his survey without any previous notice, and the officer is never certain that he will not re-survey the premises which he has just gone over. This vigilance ensures fidelity to the public service, which is further promoted by the officer being obliged to keep a minute record of every survey and every particular connected with it, stating the hour and minute when it was commenced. The supervisor who checks his proceedings is obliged to enter into his diary every error he discovers. The books of both supervisors and officers are deposited at the chief office in London, and neither class can advance in the service without a reference to them and a strict examination into their accuracy.

The assistant is an officer, whose duty it is to watch the operations of a single trader, as a soapmaker, or any manufactory in which the constant presence of an officer is necessary. This class also is employed in relieving the officers of a ride or foot-walk at those seasons of the year when the operations of the excise traders are most active.

The supernumerary attends the collector on the rounds which he makes eight times a year. He carries the official papers and documents, and is required to provide himself with a horse. He also officiates for officers who are sick. The supernumeraries and assistants are appointed to a ride or foot-walk as vacancies occur.

The expectants are individuals admitted into the service of the excise on the nomination either of the Treasury or the Board of Commissioners of Excise, the patronage being divided between them. Nearly three hundred expectants are appointed every year to supply the changes by deaths, promotions, and retirements. During the war it was frequently difficult to fill up vacancies, and officers were encouraged to introduce their sons into the service; but this difficulty is of course no longer felt. The age of the expectant must not be above thirty, nor below nineteen; and if married, he is ineligible if he has more than two children. A competent knowledge of vulgar and decimal arithmetic is necessary. On his first introduction into the service he is placed under the care of an experienced officer to receive instruction in his duties; and, as a pupil, he must continue under his care for a period, which must not be less than six weeks under any circumstances, and as much longer as necessary. He then receives a certificate of his qualifications from the supervisor who examines him, and he is employed in doing duty for sick or absent officers, receiving a salary, which is very small when he is not on actual service.

The salaries of collectors vary from £350 to £550, according to the extent of their duties and responsibility. Only two collectors are in the enjoyment of the last named sum, and the salary of the majority is £400 a year. The salary of supervisors is £200; of officers £100; of assistants £85; of supernumeraries £52; of collector's clerks from £115 to £150, the salary of fifty-one out of sixty-one clerks being £140; and the salary of expectants is £50 a year. The officers are divided into two classes, though they each receive the same salary; but one class is obliged to find a horse. When the expectants are employed as such they receive an additional allowance at the rate of £30 a year; and supernumeraries, in like manner, receive an addition to their salaries of £38 a year. Most supervisors are obliged to keep a horse. The amount paid in salaries for the country establishment (England) was £365,487 in 1835. The collectors give security to the amount of £5000; supervisors provide a bond of £1000; and all other classes in the service give security to the amount of £[illegible]

The total number of officers of each class on the country establishment (England) was 3186 in 1835, viz.: 55 collectors, 2 supernumerary collectors, 61 clerks, 316 supervisors, 1023 division or foot-walk officers, 1499 ride officers, 75 assistants, 54 supernumeraries, and 101 permit writers, besides expectants, who are unattached.

The board of excise is a sub-department charged with the collection and management of one branch of the general taxation of the country. It is not, though in practice it, as well as other boards of revenue have almost assumed to be, an independent department, instead of a sub-department, of the department of the lord high treasurer, and subject to the check and control of the lords of the treasury; the first lord of the treasury and the chancellor of the exchequer being the really responsible parties. The board consists of seven commissioners, who have equal authority and power. The chairman has a salary of £[illegible], the deputy chairman of £1500, and the other commissioners have £1200 per annum each. They appoint to offices, and pay the parties appointed such sums as are necessary; but the number of each description of officers is not allowed to exceed the number fixed by general warrant or order from the treasury. The duties transmitted by the collectors and others are paid every day by the board to the receiver-general of excise. The board is responsible for the general discipline of the service, amounting to about 7000 individuals. The correspondence with officers, traders, and the public, involves daily an average of 230 letters, or [illegible] letters per annum. It is not the practice of the board to give answers in writing to the letters of traders and manufacturers. The number of individuals employed at the chief office is [illegible], whose salaries amount to £102,872 per annum; or, including all other advantages or emoluments, to £106,052. The number of officers in each description of office is as follows:—The board, [illegible]; secretaries, 20; correspondents, 14; correspondents for Scotland and Ireland, 16; solicitors, 13; solicitors for Scotland, 5; solicitors for Ireland, [illegible]; registrars, 2; commissioners of appeals, 3; receivers-general, 12; comptrollers of cash, 3; accountants, 48; accountants for Scotland, 11; accountants for Ireland, 13; comptrollers-general, [illegible]; auditors, 8; security-office, 8; store-office, 10; inspectors of permit-paper 2; permit-examiners, [illegible]; diary-office, 5; surveying general examiners, [illegible]; London port establishment, other offices, including doorkeepers, messengers, housekeepers, [illegible]. The principle of promoting to offices of superintendence men who are intimately acquainted with the practice of the excise in all its branches does not seem to have been adopted with sufficient strictness.

Since 1823, the Irish and Scotch boards have been consolidated with the English establishment. The powers of the Irish and Scotch commissioners, twelve in number, were distinct and independent of those of the English board. The business of the three countries was therefore managed by twenty-one commissioners, whose salaries amounted to £26,700; but it is now better conducted by a single board of seven commissioners; and the commissioners of inquiry are of opinion that the business would be still better performed if there were only one chief commissioner, as his responsibility would be greater. The duties of the excise establishment, both in Ireland and Scotland, are similar in principle to the English collections. Each country is divided into similar districts, and officers are removed from one country to the other. The number of officers of every description employed in Ireland was 618 in 1835; salaries £73,272. The police revenue force is peculiar to Ireland, and consisted of above 1000 men, whose object was to put a stop to illicit distillation. The commissioners of excise inquiry recommended that such a force should not be connected with the excise establishment. The number of collectors, supervisors, and officers in Scotland was 875 in 1835; salaries £95,195.

The board of excise recognizes as one of its most important responsibilities the duty of keeping the service in a state of efficiency. To attain this object, a systematic examination is made of the performances and proceedings of each individual officer before he can be advanced in rank; and the duties of the various classes of officers are allotted in such a manner as to render the officers a constant check upon each other. The collector is a check upon the supervisor; the supervisor upon the officer; and the vigilance of the surveying-general examiners, which is not permanent, but directed, without any previous intimation, on a given point, is intended to render the system still more perfect. An officer who has been three years employed, and two in a ride, may be promoted to a foot-walk; and after a service of nine years, three of which must be passed in a foot-walk, he is eligible for the office of supervisor. A supervisor who has been employed five years in that station, and who has been altogether fifteen years in the service, may be appointed to a collectorship. An officer is not promoted unless, having served for the time required in one grade, he petitions for advancement to another. But having petitioned, he subjects himself to a rigid examination of his conduct and official character. This is technically termed "taking out a character," and the diary-office is the department where this investigation takes place. In this office are deposited the diaries made out by surveying-general examiners and supervisors, showing the daily performances of every officer, and the acts of neglect or omission which have been discovered in the officers of every district, with the collector's observations. The clerks of the diary-office have all been appointed from supervisorships, as a practical acquaintance with the duties of officers is considered essential. The diaries are received and registered eight times every year. These diaries are read by the board, to censure or commend as the case may require. The diaries, on being returned to the proper office, again registered, and the remarks made by the board on each are entered in a book provided for purpose. These records of censure or admonitions are preserved in the office, and a copy is sent the proper collection. When an officer petitions promotion, the diaries are searched, and his official character is taken out and furnished to the secretary. In the diary-office are also entered the, number of family, time employed, time sick or absent, of every officer in the service. When a supervisor's character is taken out for promotion, his books for one year are examined, and the books of all the officers under him, for a quarter of a year, are examined also; all the accounts are recast, and if, in the books of the latter, errors are discovered, the supervisor is quite as responsible as if they had taken place in his own books; and a certain degree of neglect on his part would retard his promotion. This inquiry is conducted by the country examiners; and when this has been done, the investigation is taken up by a surveying-general examiner, for the purpose of ascertaining the disposal of the supervisor's time: whether it has been judiciously employed or not; whether he has been too long employed on a duty which ought to have occupied a shorter period, &c. Two months are required for completing the investigation; and when the report is laid before the board, the name of the officer is not given. When a ride or foot-walk officer applies for promotion, his books, for a period of three months only, are subjected to examination. Thus, when a vacancy in the service occurs by death or otherwise, the book in which applications are inserted for particular situations is examined, and next the official character of these individuals is taken into consideration, and promotion takes place without the officer's name being known. Personal application in favour of officers is not permitted, but is sure to prejudice their interests; and the excuse that it was made without the officer's knowledge is not admitted without a strict scrutiny. The surveying-general examiners are not employed at the chief office only, but proceed to the country, checking the performances of collectors, supervisors, and officers, officiating for absent collectors, and acting, with reference to excise traders, in the same manner as the supervisor, who checks the officers under him by coming upon them at unexpected times. It is a part of the system of discipline to remove officers when they have been stationed four years in one place. This plan was introduced by Mr Pitt; and about 1100 officers change their residence each year, at an average cost of above £4000. There are good reasons for believing that this part of the system is not advantageous to the service, while it often operates with great hardship upon the officers and their families. If an officer has once been in collusion with traders, he will be liable to corrupt the traders of the district to which he is removed, and with as little delay as possible; and on the other hand, the fraudulent trader of the district which he has just left will endeavour to corrupt the new officer.

EXETER, (*a*.) The city of Exeter, called by the Romans, *Isca Danmoniorum*, derives its name from the river Exe, on the sides of which it is built; Exe, Esk, or Wisk, being an old Celtic word signifying water. It is the same word which forms the first syllable of the Irish Usquebaugh and the Scotch Whiskey, both of which signify the "water of life." The original British name of the place, according to an old writer, was *Caerwisc*, which means the city of the water. It is also said to have been called at one period, from the number of monasteries within its walls, *Monkton*, and to have received from king Athelstan the name of *Exanceaster*. Bishop Godwin says, that the same monarch, in the year 922, founded a convent of Benedictine monks on the spot where the eastern part of the present cathedral stands; and there is an opinion, which, however, cannot be relied on, of a previous monastery having been established on this site by king Ethelred in 868. Athelstan's monastery did not last long, but was broken up, and its inmates expelled, by the attacks of the Danes. It was restored by Edgar; again destroyed by Sweyn, king of Denmark, in 1003, and afterwards rebuilt by Canute. But in 1050, Edward the confessor placed it on a new footing by removing the bishop's see from Crediton where it formerly was, to Exeter, uniting with it the see of St Germans (in Cornwall,) and making Leofric, who was also lord chancellor, the first bishop of Exeter. Thus the sees of Cornwall and Devon became united.

The cathedral, which is now called St Peter's, though anciently dedicated to St Peter and St Paul, is considered to have been at that time very small; about sixty feet long: it doubtless occupied a part of the site of the present building, but as the latter presents no certain signs of the architecture of so early a period, it is difficult to determine the ancient position. In 1107, bishop Warlewast, a Norman, began to enlarge Exeter cathedral suitably to the taste of his times. He laid the foundation of the choir; and it may reasonably be concluded, that he built the large north and south towers now remaining. In 1138, however, in consequence of the opposition of Rivers earl of Devon to the claims of king Stephen, Exeter was the scene of a dreadful siege, and on its being taken by the king's army, many buildings, including the cathedral, suffered by fire. Between the period of this siege and the appointment of bishop Quivil, in 1280 (142 years), considerable sums were laid out in repairs; but, it is probable that the structure had received such material injury, as to render a rebuilding of most of it necessary: accordingly Quivil is termed "the founder of the new work," and almost all writers on the subject have given him the credit of founding and designing the present spacious and beautiful cathedral. The entire length of the structure, including the walls, is 408 feet, breadth within 64, and height of the towers 160. It abounds with interesting monuments: the bishop's throne, sixty feet in height, is a specimen of magnificent tabernacle work. The cathedral is also remarkable for its organ, its bells, and its ancient astronomical clock. The clock is in the north tower, and is said to have been the gift of bishop Courtney, who occupied the see from 1478 to 1487. Mr Britton, however, in his "History of Exeter cathedral," has referred to some ancient authorities, from which it would appear that there was a famous clock here many years before the time of that bishop. The present clock, besides the hour of the day, indicates the age of the moon, and represents the revolution of that luminary around the earth. Its face is seven feet in diameter. In the north tower is also the famous bell, called the Peter, the largest in England except Great Tom of Christ's church, Oxford. The bell at Christ's church weighs 17,000 lbs., and this is said to weigh 12,500. Unfortunately, the Exeter bell is now so hung that it cannot be rung. It, as well as the clock, is said to be the gift of bishop Courtney; but Mr Britton, to whose work we are indebted for these particulars respecting it, is of opinion that it is probably of still greater antiquity. The tradition is, that it was brought from the cathedral of Llandaff. Having been cracked on the 5th of November, 1611, it was recast in 1676. The organ is said to be one of the most powerful in Europe. It was built by an English artist in 1665.

Exeter vies with most cities in charitable institutions. There also several literary societies, and some excellent public libraries. The earliest charter of the city was granted by Henry II., and succeeding monarchs confirmed or extended its privileges. Its civil government, previous to the municipal act in 1835, was vested in a mayor, eight aldermen, a sheriff, a town-clerk, and sixteen members of the town-council. By the new act the number of aldermen is increased to twelve and of councillors to thirty-six. The act also divided the borough into six wards, and bestowed upon it a commission of the peace.

The river Exe is navigable for vessels of [illegible] tons burden up to the quay, which is very spacious. At an early period in the history of Exeter, a water course or canal was made to communicate with the town and the estuary of the Exe. This underwent in the course of time various improvements, but still in 1819 was found so insufficient for the demands of commerce, that Mr Green, the county surveyor, was employed to survey it, and report its state. He was further instructed, in 1824, to examine the state of the river from the estuary to the city. From his reports it appears, he found that vessels drawing from twelve to fourteen feet of water could pass the bar, and ascend the Exe by the same tide as far as the Turf, which is more than a mile nearer the estuary of the Exe than the entrance to the old canal. He found also that by extending the canal to this place, and constructing a proper lock, such vessels as could pass the bar might proceed at once to Exeter, avoiding all lighterage, pilotage, and delays incidental to the discharging of their cargoes in the Bight of Exmouth. The suggestions and plans of Mr Green, having received the approval of the celebrated Telford, were adopted by the mayor and chamber, and in 1825 the work was commenced, which was finished in 1830. The sea-lock at Turf is [illegible] feet long, and 30 feet wide. The basin or dock, which prevents vessels losing time in consequence of the canal being so frequently closed on account of the floods of the river, is 917 feet in length and varies from 110 to 90 feet in breadth. Its uniform depth is eighteen feet, with commodious sites on its margin for wharfs, &c. The opening of it on the [illegible] Sept. 1830, was celebrated by the inhabitants of Exeter and the surrounding county with great demonstrations of festivity.

EXMOUTH, ADMIRAL LORD VISCOUNT, a distinguished naval officer, born on the 19th April, 1757. The father of lord Exmouth, whose name was Samuel Pellew, commanded the government packet-boat at Dover, where his son Edward was born. The boy went to sea at the age of thirteen, having lost his father five years before. The ship in which he began his career was the Juno frigate, and his first voyage was to the Falkland islands at the extremity of South America. He was not engaged in active service till 1776, on the breaking out of the American war, when being sent out as midshipman in the Blonde frigate to Lake Champlain, he greatly distinguished himself in the course of that and the following year. The gallantry which he displayed on various occasions obtained acknowledgments in the most flattering terms, both from lord Howe and general Burgoyne, the former of whom also gave him a lieutenant's commission. On the surrender of the British after the battle of Saratoga, he returned on his parole to England, and was soon after appointed *first lieutenant* of the Apollo frigate, under captain Pownoll. In the midst of an action, fought in the spring of 1780, the captain fell wounded in Lieutenant Pellew's arms, who thereupon assumed the command of the ship, and soon compelled the enemy to take safety in flight. For his conduct on this occasion, he was promoted to the command of the Hazard sloop of war, from which, in March 1782, he was removed to the Pelican. A few months after he was raised by admiral Keppel to the rank of post captain, for a very spirited attack, near the Bass Rock in the Frith of Forth, on three of the enemy's privateers, all of which he drove on shore. The following ten years he spent partly afloat at various stations, and in the command of different ships, and partly at home.

On the breaking out of the war of 1793, he was appointed to the command of the frigate La Nymphe, of thirty-six guns, in which he sailed from Falmouth on the 17th June, and the next day captured the French ship La Cléopatre, after a sharp struggle. For this achievement he received the honour of knighthood. It was followed by many other successful exploits, the enumeration of which we must omit. Twice, when captain of the Winchelsea frigate, his heroic spirit was signally displayed by his leaping from the deck, and thus saving two of his drowning sailors. A more conspicuous example of this noble feeling was shown on the 26th January, 1796, when, by his great personal exertions, he preserved the crew and passengers of the Dutton transport, which, crowded with troops and their families, proceeding on the expedition to the West Indies, was driven on the rocks under the citadel at Plymouth. His own modest account of this act of benevolence, contained in a private letter which he wrote many years afterwards (1811), when commander-in-chief in the North Seas, is as follows. "Why do you ask me to relate the wreck of the Dutton? Susan (Lady Exmouth) and I were driving to a dinner arty at Plymouth, when we saw crowds running o the Hoe, and learning it was a wreck, I left the arriage to take her on, and joined the crowd. I w the loss of the whole five or six hundred was evitable without somebody to direct them, for he last officer was pulled on shore as I reached he surf. I urged their return, which was refused; pon which I made the rope fast to myself, and as hauled through the surf on board, established rder, and did not leave her until every soul was ved but the boatswain, who would not go before e. I got safe, and so did he, and the ship went l to pieces; but I was laid in bed for a week by itting under the mainmast (which had fallen towards the shore); and my back was cured by lord Spencer's having conveyed to me by letter his Majesty's intention to dub me baronet. No more have I to say, except that I felt more pleasure in giving to a mother's arms a dear little infant only three weeks old, than I ever felt in my life; and both were saved. The struggle she had to entrust me with the bantling was a scene I cannot describe, nor need you, and consequently you will never let this be visible." This letter was communicated to no one, till after the death of the writer. From this time, till the peace in 1802, Sir Edward was employed in active service, and shared largely in the success which attended the naval arms of his country. On coming home after the peace he was returned to parliament as member for Barnstaple. The resumption of hostilities, however, soon called him again abroad. In 1804 he was sent to take the chief command on the East-India station, in the Culloden of seventy-four guns; and here he remained till 1809, when he had attained the rank of vice-admiral. A few months after his return to England, he was again sent out as commander-in-chief of the fleet then blockading the Scheldt, and assisted in various operations of importance till the peace of 1814. Among the promotions which were made on that occasion, Admiral Pellew was elevated to the peerage by the title of baron Exmouth, with a pension of £2000 per annum. He also received the riband of the Bath, and a year after, the grand cross of that order. On the escape of Napoleon his services were again employed, and he was sent out in command of a squadron to the Mediterranean. From this station, in the beginning of the year 1816, he proceeded, by order of the government, to Algiers, and obtained from the Dey a promise to liberate all the subjects of the allies who were detained by him in slavery. Most of our readers will recollect the manner in which this engagement was disregarded by the African sovereign as soon as the British ships had left his coast, and the brilliant success which attended the expedition that was immediately sent out under lord Exmouth's command to compel him to perform his stipulations. Twelve hundred Christian slaves were by this exploit restored to liberty. The dignity of Viscount was the well-merited reward which lord Exmouth received for the important service which he had rendered to his country and to Christendom. The following year the chief command at Plymouth was conferred on him for the usual period of three years; and at the conclusion of that term, having now attained the age of sixty-three, he retired into private life, passing the greater part of his time at his beautiful residence at Teignmouth, where he died on the 23d January, 1833.

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FALKLAND ISLANDS, (*a.*) The Falkland ands lie between the parallels of 51° 10′ and 52° south, and the meridian 58° and 62° west near e straits of Magellan. They consist of two large and a number of small islands. The two large islands are about seventy leagues in circumference, and are divided by a channel twelve leagues in length and from one to three in breadth. The small islands are fortunately situated, so as to protect the harbours of the large ones. These islands were first discovered by Sir Richard Hawkins in 1594, or, as some say, by Captain Davis, an English navigator, in 1592; but little was known of them until Commodore Byron formally took possession of them for his majesty George III., in January, 1765, under the name of the Falkland islands. They were found to abound in ducks, teal, and all kinds of sea-fowl, and to afford plenty of fresh water. A small English settlement formed here in 1766, was destroyed in 1770 by a Spanish expedition. Spain, however, finally conceded our right to the islands. Latterly, the Buenos Ayrean government set up a claim to them, as the Spaniards had formerly used them as a prison for South American delinquents. In December, 1832, commander Onslow visited Port Egmont, on West Falkland island, and not finding any inhabitants, left an inscription, attached to a flag-staff, stating, "that these islands had been visited by his Britannic Majesty's ship Clio, for the purpose of exercising the rights of sovereignty, 23d Dec. 1832." At Port Louis, on East Falkland island, there was an inconsiderable settlement of Buenos Ayreans, chiefly engaged in catching wild cattle, &c. for the supply of such ships as occasionally touched there. Within the last few years, numerous whalers, British, American, and French, have found the Falkland isles a convenient station for refitting and taking in supplies.

FAULT; a term used by miners and geologists, to express the sudden interruption of a vein or strata, and this may be caused by a fissure of the mass of strata, and a consequent elevation of one side, and depression of the other, or it may be by the intervention of a mass of igneous rock called a dyke, which may vary in thickness from a few inches or a few feet, to many hundred yards. Dykes of trap rocks are those most commonly found traversing the sedimentary strata, and to their intrusion is owing the dislocations, and irregularities of the coal seams, a source of such frequent annoyance to miners.

FAVERSHAM; a seaport-town in the county of Kent, situated opposite the south corner of the isle of Shepey, nine miles west from Canterbury, and forty-seven east from London. It is a place of great antiquity, and consists of four principal streets forming an irregular cross. It carries on a considerable trade in corn, hops, fruits, wool, &c. with the London market. The principal manufacture is that of gunpowder, for which the town has been famous since the time of Elizabeth, and from which it has suffered several times by explosions. There is a large oyster-fishery here. Population in 1831, 4429.

FERMOY; a town in the county of Cork, Ireland, situated on the river Blackwater, seventeen miles N. by E. from Cork, and 108 S.W. from Dublin. The town is regularly built, and consists of several broad and handsome streets. It was planned and erected by the late John Anderson, Esq., whose name is associated with the first introduction of mail-coaches into Ireland. He converted a mean village, which it was at the close of the last century, into a large, handsome, and convenient town, and he lived to see it attain a character as a place of manufacture and of trade, and become the chief military station in the south of the kingdom. The public buildings are erected from regular and architectural designs. The church, designed by Mr Hargrave, is much admired. Here are also a Roman Catholic chapel, meeting-houses of dissenters, a spacious market-house, and extensive barracks for cavalry, infantry, and artillery. The barracks, erected in 1806 and 1809, are calculated to accommodate about 3000 men. Flour-mills, a paper mill, breweries of beer and ale, manufactures of soap and candles, and of various other necessaries, are established here. Population of town in 1831, 6976; of parish, including town, 8690.

FEROE ISLANDS; a group of islands in the North sea, lying between the latitudes of 61° 15' and 62° 21', at almost equal distances from Iceland, Orkney, and Norway. They are in number twenty-two, seventeen of which are inhabited, and they extend altogether sixty-seven miles in length from north to south, and forty-five in breadth from east to west. They consist of steep rocks, the bases of which are separated by narrow and shallow channels of the sea, and whose sides, for the most part, form precipices, from two to three hundred fathoms high. Within these iron-bound coasts there are no valleys of any extent; but a few narrow dales, broken and craggy, are found between their summits, where the energies of man are hardly taxed to win a scanty supply from the soil, which never exceeds four feet, and is frequently not more than eight inches in depth. This soil, moreover, is often swept away by the winds of the north, that in a moment can destroy the labour and improvement of years. These winds descend from the lofty hills to the shore, impelling large stones, and carrying them forward like balls; at times even tearing the turf from the sides of the hills, rolling it together like a sheet of lead, and precipitating it into the valleys. To hinder the roofs of their houses from being blown away, the poor Feroese are obliged to place boards upon them, and to throw ropes over them, the ends of which are fastened to heavy stones. Another dreadful enemy they have to contend with, is the voracious rat. These animals are so numerous, that they will sometimes destroy all a corn-field in a single night, and when they get at the sea-fowl in the crannies of the rocks, they commit such havoc that the bold fowler, who pursues his avocation at the risk of his neck, finds little left to reward his pains and perils. In one island, the church-path, which is the best and [illegible] the only road, is so steep and narrow that at funerals the corpse is fastened to a board and [illegible] upon men's shoulders. At another island, [illegible] the clergyman comes to visit them, which he [illegible] on Sundays as often as the weather and the sea [illegible] allow, they hoist him up the lofty steep cliff [illegible] his boat, by a rope, there being no other [illegible] means of landing. Yet in spite of these [illegible] difficulties and horrors, (according to Landt, a [illegible] pastor who resided among them many years [illegible] who wrote an admirable account of these [illegible] the Feroese are a virtuous, a civilized, and a [illegible] people. Though obliged to struggle hard for [illegible] subsistence, which is mainly procured by the [illegible] ous occupations of fishing in their dark and [illegible] northern seas, and fowling among their giddy [illegible] ces, they all find time to acquire reading, [illegible] and arithmetic. They are of an extremely [illegible] able disposition; hospitable according to [illegible] means; kind and benevolent. They are [illegible] honest in their dealings with each other, and [illegible] and compassionate towards strangers.

The population of these islands amounted, according to a census taken in 1812, to [illegible] whole of the king's revenue amounted, in the year 1790, to 3172 rix-dollars. Sheep form the principal *riches* of the islands, and the number possessed by them in 1912 was estimated at upwards of 35,000. Some individuals have flocks of 200 and 300. These sheep are allowed to run about both in summer and winter without ever being housed. The wool is in general coarse, and is torn off the *hide in* a very rough manner. On the more basaltic islands, the grass is uncommonly fattening and luxuriant. The Danish government generally assigns *the* monopoly of the trade of these islands to some private mercantile company at Copenhagen, under the condition of supplying the islanders with a *sufficient* quantity of grain at a certain fixed price. The exports consist of hose knit on the islands, to the annual amount of 100,000 pairs; tallow, fish, *train-oil*, feathers, skins, and butter.

Stromoe is the largest of the Feroe islands, being twenty-seven miles long and seven broad, extending *S.E. and* N.W. About a dozen villages are interspersed through it. Thorshaun is the capital, and is situated on a small tongue of land on the *south-east of* the island. It is the seat of government, as well as the staple of trade; and the residence of the principal civil officers, such as the commandant, chief-justice, &c. There is here a Latin school (being the only seminary, indeed, in all the islands), and a neat church covered with slate. *The town* is defended by a fort constructed on a projecting rock, which was strengthened and repaired during the American war. The houses of he *town* are almost all built of wood, and the treets in general so narrow, that only one person an conveniently walk through them. The town ntains only between 500 and 600 inhabitants. There was here formerly a mart for Danish East nd West Indian goods, and a considerable trade rried on with Scotland; but this has almost en- rely ceased since the termination of the American ar.

The Feroe islands, it is believed, were first peo- led by some Norwegians in the ninth century, who tired thither from the sway of the renowned arold Harfazer, king of Norway, and supported emselves, after the manner of their fathers, by racy. *It is evident*, however, from their lan- age, which is a corrupted mixture of old Danish, anish, and other northern dialects, that, subse- ently, *these* were joined by emigrants from Fin- d, and other parts of Scandinavia. Magnus the od, Harold's successor, afterwards reduced these nds *to obedience*, and they continued to belong Norway until, upon the union of the crowns, y were annexed to Denmark. During the last r, *some British* privateers landed and plundered ious of these islands; but the British govern- nt, on learning the circumstance, issued an order counsel, *declaring* that the inoffensive islanders e not to be molested in consequence of the war ween Great Britain and Denmark.

EATHERS, (*a.*) If we had never seen the ering of birds, we could have formed no con- tion of anything so perfect and beautiful; and ch, by uniting in the highest degree the quali- of warmth, lightness, and least resistance to air, *forms* a vestment so appropriate to the life h the animal is to lead. While we observe general aspect of the feathered world, we must ire the wisdom and goodness of the Deity in part of his creation; and our admiration will creased by further examination. Every feather is a mechanical wonder. If we look at a quill, we find two properties not easily brought together, strength and lightness. There are few things more remarkable than the strength and lightness of the pens with which we write. If we look at the upper part of the stem, we see a material made for the purpose, used in no other class of animals, and in no other part of birds, tough, light, pliant, and elastic. The pith, also, which feeds the feathers, is unlike any other animal substance; it is neither bone, flesh, membrane, nor tendon. But the artificial part of a feather is the beard, or, as it is sometimes called, the vane. The beards are fastened on each side of the stem, and constitute the breadth of the feather, and we usually strip them off, from one side or both, when we make a pen.

The separate pieces, or laminæ, of which the beard is composed, are called threads, sometimes filaments, or rays. The first thing to be observed is, how much stronger the beard of the feather shows itself to be, when pressed in a direction perpendicular to its plane, than when rubbed either up or down in the line of the stem; and the structure which occasions this difference is, that the laminæ, of which these beards are composed, are flat, and placed with their flat sides towards each other, by which means, while they easily bend for the approaching of each other, as you may perceive by drawing your finger ever so lightly upwards, they are much harder to bend out of their plane, as that is the direction in which they have to encounter the impulse and pressure of the air, and in which their strength is wanted, and put to the trial.

This is one peculiarity in the structure of a feather, and a second is still more remarkable. If you examine a feather, you cannot help taking notice, that the threads, or laminæ, of which we have been speaking, in their natural state unite; that their union is something more than the mere opposition of loose surfaces; that they are not parted asunder without some degree of force; that nevertheless, there is no glutinous cohesion between them; that therefore, by some mechanical means or other, they catch, or clasp among themselves, thereby giving to the beard, or vane, its closeness and compactness of texture. Nor is this all: when two laminæ, which have been separated by accident or force, are brought together again, they immediately reclasp; the connection, whatever it was, is perfectly recovered, and the beard of the feather becomes as smooth and firm as if nothing had happened to it. Draw your finger down the feather, which is against the grain, and you break, probably, the junction of some of the contiguous threads; draw your finger up the feather, and you will restore all things to their former state.

The threads, or laminæ, are interlaced with one another, and the interlacing is performed by means of a vast number of fibres or teeth, which the laminæ shoot forth on each side, and which hook and grapple together. A person counted fifty of these fibres, in one-twentieth of an inch. These fibres are crooked but curved, after a different manner; for those which proceed from the thread on the side towards the extremity of the feather, are longer and more flexible, and bent downward there, as those which proceed from the side towards the beginning, or quill-end of the feather, are shorter, firmer, and turn upwards. When two laminæ are pressed together, so that these long fibres are forced far enough over the short ones, their crooked parts fall into the cavity made by the crooked parts of the others; just as the latch that is fastened to a door, enters into the cavity of the catch fixed to the door-post, and there hooking itself, fastens the door; for it is in this manner that one thread of a feather is fastened to the other.

This admirable structure of the feather, which it is easy to see with the microscope, succeeds perfectly for the use to which Nature has designed it; which use was, not only that the laminæ might be united, but that when one thread or lamina has been separated from another by some external violence, it might be reclasped with sufficient facility and expedition

In the ostrich, this apparatus of crotchets and fibres, of hooks and teeth, is wanting: and the consequence is, that the filaments hang loose and separate from one another, forming only a kind of down. This constitution of the feathers, however it may fit them to adorn a lady's head-dress, may be considered an imperfection in the bird; as wings composed of these feathers, although they may greatly assist it in running, do not serve for flight.

FILTRATION OF WATER, (*a*.) So little has been written on the subject of filtration of a practical nature, that the art of conducting the process upon a large scale is yet to be acquired. Several trials have been made on superficies exceeding one thousand square feet, to ascertain the most approved principle, and the fitness of the various materials proposed to be employed. All the modifications of lateral and ascending filters have proved disadvantageous; difficulties have been encountered in preserving the various strata in their assigned position, according to the sizes of their component particles; and effectual cleansing could not be accomplished without the removal of the whole mass of the filtering medium. All devices by currents, reaction of water, and other means, have also proved either inefficient, or inconvenient and expensive.

The mode of filtration adopted at the Chelsea works is by descent, and the medium consists of fine and coarse river-sand, comminuted shells, and pebbles, and of small and large gravel. These materials are laid in a reservoir, their surface being disposed in ridges, which presents to the spectator an undulated appearance. The first experiments by descent failed; sufficient care had not been taken in the selection and separation of the material. Explosions of condensed air in the tunnels for collecting the filtered water deranged the strata occasionally, and were obviated by air-drains. The filtration was, in one instance, stopped by the addition of fresh sand, without having previously removed the old sand, which should be applied as the upper stratum; although, in this case, the surface had been thoroughly cleansed previously, a film or puddle was formed on the original sand, and was sufficiently supported by the particles of sand to sustain five feet head of water, at first acting to impede, and eventually to stop the filtration. The process was greatly improved by the introduction of the small shells, such as are usually found at Shellness, the flat surfaces of which overlap, and assist in the great desideratum of separating the sand from the gravel, and thus tending to preserve the free percolation in the lower strata, which is essential for ensuring filtration sufficiently rapid for waterwork purposes.

The strata on the site of the filtering-works, under the vegetable mould, consist of loam, sand, and gravel, overlying the London clay to the depth of thirty feet. The sand and gravel contain powerful land-springs, and the masses of ferruginous conglomerate they pass through are so great, that the water is of an objectionable quality; therefore, in constructing the basin to receive the filtering materials, it was necessary to exclude all the land-water by clay and cement walling.

An excavation into the sand and gravel, of sufficient depth to admit of the water from the river flowing on to the filtering bed, would have involved too great an outlay; and this circumstance led to the construction of the basin, at a level which rendered pumping the water from the river unavoidable; but the consequent subsidence of the water, and the command of a constant flow to the filtering-bed, are advantages which result from the expedient of pumping; and the interest of the money saved has more than compensated for the annual expense. The filtering-bed covers an area of one acre, and there is an elevated reservoir of [illegible] the same size. The lower stratum of gravel contains the tunnels for collecting the filtered water. They are built with cement-blocks, and partially open jointed, two spaces of an inch and a half on the bed, and the heading-joint of each brick being open. The fine gravel, pebbles and shells, and the coarse and fine sand, are laid upon the large gravel.

The water is let on to the filtering bed at [illegible] places, and the ends of the pipes are fixed with curved boards to diffuse the currents of water, and prevent the surface of the sand from being disturbed. The interstices in the fine sand being more minute than the subjacent strata, it is found that the impurities are arrested near the surface, and it has not been necessary to remove more than one inch depth of the sand at any one time of cleansing. This work is effected by scraping the surface every fortnight, and upon a careful examination it has been discovered that the sediment penetrates to the depth of from six to nine inches, according to the state of the Thames water; the greatest penetration occurring during the prevalence of land floods in the river. Notwithstanding this, however, it is not necessary to remove more than the depth stated, which contains the grosser impurities, the remainder tending rather to improve filtration by rendering the interstices between the particles of sand still more minute. From these observations it must not be inferred that the process is simply a fine mode of straining, for something more is evidently effected; an appearance resembling fermentation being discernible when the water is in contact with the sand.

The quantity of water filtered is from three to four hundred thousand cubic feet daily, according to the demand. The undulated surface of the filtering-bed admits of parts of it being worked, and others drained; and it aids in cleansing, by admitting the grosser particles of the silt to slide down the ridges, and form a sediment easily manageable. The removal of the sand is effected by lifting portions of the fine sand in succession, and [illegible] fresh sand of the same description [illegible] them.

FITZWILLIAM, Earl. The Right William Wentworth Fitzwilliam, fourth earl Fitzwilliam, of the county of Tyrone, was born 30th, 1748, the elder son of John the second Earl, lady Anne Wentworth, eldest daughter of first marquis of Rockingham. He was only in the ninth year of his age at the death of his

August 10th, 1756, when his large estates were confided to the care of Sir Matthew Lamb, grandfather of the present viscount Melbourne. At an early age he was sent to Eton, where he had for class-fellows Charles Fox and the late Earl of Carlisle; with both of whom he formed that close intercourse, which, with little interruption, lasted through life. From Eton his lordship removed to King's college, Cambridge; and he afterwards travelled abroad. The degree of D.C.L. was conferred upon him at Oxford, July 3d, 1793. In 1769, he took his seat in the house of peers. Few young noblemen ever entered life under more favourable auspices. Inheriting a good fortune from his father, he was also the presumptive heir to the large estates of the marquis of Rockingham; and was honoured with the friendship of the dukes of Devonshire and Portland, and all the leading characters of the Whig party. These connections he still further extended, by an early marriage, on the 11th of July, 1770, with lady Charlotte Ponsonby, youngest daughter of William Earl of Besborough. Enrolling himself among the opponents of lord North's administration, he persevered, throughout the American war, in resisting the progress of that contest, as equally disgraceful and ruinous. When the change of ministry, however, took place at the beginning of 1782, and his uncle the marquis of Rockingham was placed at the head of the new cabinet, Earl Fitzwilliam did not take part in the distribution of office. The death of the marquis, which happened in June of the same year, brought Earl Fitzwilliam a vast accession of fortune, including the fine domain of Wentworth, near Rotherham, in Yorkshire, which had descended to the family of Watson from the sister and heiress of the great Earl of Strafford. After succeeding to Wentworth, the Earl made that noble mansion, which had been built by his maternal grandfather, his most usual summer residence, and in 1807, prefixed the name of Wentworth to the surname of his ancient house. On the 11th of July, 1794, when the duke of Portland became the nominal head of the cabinet, while Mr Pitt guided the helm, earl Fitzwilliam accepted the office of president of the council, which he held until the 17th of December following. He was afterwards appointed lord lieutenant of Ireland. His inclination to healing measures rendered this appointment peculiarly acceptable to the people of that kingdom, and he was received with universal satisfaction. The Irish parliament met on the 22d of January, 1795, and unanimously voted him the most favourable addresses; and, on the 9th of February, agreed to the amplest supplies that had ever been granted in that kingdom. In order to place himself in a favourable light with the Catholic party, he employed, in the transactions with its leading members, a person in whom the Catholics universally confided: this was the celebrated Mr Grattan, whom they had selected as the most proper and active member of the Irish legislature for the effecting of their purposes. Mr Grattan moved, accordingly, on the 12th of February, for leave to bring in a bill for the relief of persons professing the Roman Catholic religion; and leave was given. The joy and exultation expressed by the Roman Catholics on this occasion, had never been equalled in Ireland. But the universal satisfaction arising from the hopes conceived of an approaching emancipation from all restrictions was quickly damped by the intelligence that arrived two days only after the passing of the motion, that the British ministry were averse to the measure. Earl Fitzwilliam informed them of the great danger that would infallibly result from retracting the assent so formally given to a motion of such importance; and explicitly refused, by taking upon him that office, to be the person to raise a flame which nothing but the force of arms could keep down. Such were his own words. In consequence of this answer, he was dismissed from his post, which was conferred upon earl Camden. The resentment of the people of Ireland was particularly marked on the 25th of March, when earl Fitzwilliam took his departure. It was a day of general gloom: the shops were shut, no business of any kind was transacted, and the whole city put on mourning. The noble earl's coach was drawn to the waterside by some of the most respectable citizens; and the people seemed intent on every demonstration of grief. When the death of Mr Pitt occasioned a new ministerial change, in 1806, earl Fitzwilliam returned to the seat of president of the counsel, which he retained until the fall of the Grenville administration in the following year. He afterwards gradually retired from public life: and, in 1819, he resigned the lieutenancy of the west riding of Yorkshire, which he had held from 1798. At a visit which he paid to Ireland a few years previous to his death, he was welcomed with the utmost enthusiasm. Indeed, independently of the popular measures with which he had connected his reputation, his liberal and beneficent management of his large Irish estates fully deserved every mark of the public approbation and respect. His private charities were very extensive. His manners were engaging, persuasive, and attractive. His pleasures were chiefly those of the chase, in which, in the midst of a splendid circle, he combined the keenness of the sportsman with the magnificence of a prince. Upwards of a hundred horses belonged to his hunting establishment. The cortège with which he was accustomed to attend the races at Doncaster might be regarded as an imposing relic of ancient manners. His lordship died at Milton house, near Peterborough, on the 8th of February, 1833, in the 85th year of his age, leaving an only son, lord Milton, now earl Fitzwilliam.

FLESH-FLY. The history of the Flesh-fly (*musca carnaria*) is better known than that of the common one. It deposits its eggs on flesh, and then the latter is said to be fly-blown. It is a law of nature, that the particles which form an organized body, shall, on its dissolution, serve for the sustentation of others; and hence, when an animal dies, it is taken possession of, in one way or another, by those which are living. In hot weather a dead body runs rapidly into putrefaction, and in that state attracts, by its odour, those flies which lay their eggs in flesh, and the carcass is very soon occupied by myriads of maggots, which are hatched from those eggs, and are flies in the larva state. When we think of the horrible odour which a putrefying animal emits, we cannot but admire the wise arrangement by which its very odour is made agreeable to multitudes of living creatures; for, as Paley remarks, maggots revel in putrefaction. We observe, also, that the odour is most powerful at those times when flies are most numerous and active, that is, in hot weather. In the egg itself there is the very wise provision, that it is hatched in a few hours, and the maggot arrives at its full growth in a week; and thus we see how divine wisdom is displayed in every thing, even in what, to ordinary comprehension, is most disagreeable or disgusting. If the fly's eggs did not hatch in a very short time, and the larva soon attain its full growth, the object in view would not be gained. In some other species of flies whose larvæ feed on flesh, not a single moment is lost; for, instead of an egg being laid, the larva is deposited in the living state, the egg having been previously hatched within the body of the parent; this, indeed, is stated to occur very often with the common flesh, or blow-fly.

FLETCHER, Mrs, formerly Miss Jewsbury, a very agreeable writer, was a native of Warwickshire. Early in life she was deprived of her mother, and thenceforth called upon to take her place at the head of a large family (then removed to Manchester), with the further trial of most precarious health. At an early period of her life she ventured to address a letter to Wordsworth, which led to a correspondence, and thence to a permanent friendship. She was also materially assisted in the developement of her talents, and bringing their fruits before the public, by the advice and active kindness of Mr Alaric Watts, at that time resident in Manchester; an obligation which she was always ready gratefully to acknowledge. Her first work was entitled "Phantasmagoria; or, Essays on Life and Literature," which was well received by the public. This was followed by her "Letters to the Young," written soon after a severe illness; her "Lays for Leisure Hours," and lastly, her "Three Histories," all of which were deservedly popular. But many of her best writings are scattered among the annuals and other periodicals. Mrs Fletcher died in India, on her way from Sholapore to Bombay, 3d October, 1833.

FOLKSTONE; a seaport town of England, in Kentshire, situated on the shore of the English channel, opposite to Boulogne, seventy miles E.S.E. of London. The harbour here is extensive and convenient, capable of receiving vessels of 300 tons burden. The fish brought in here are regarded as a superior kind, and the boats employed are numerous; they are engaged during the season in catching mackerel for the London markets; and at Michaelmas, turn their attention to the herring-fishery on the Norfolk and Suffolk coasts: soles, whiting, conger-eels, and other fish, are obtained here in the highest perfection. From the salubrity of the air, and its delightful scenery, Folkstone is much frequented by company, for the pleasure of sea-bathing. Harvey, the discoverer of the circulation of the blood, was a native of Folkstone. Population of town and parish in 1831, 4296.

FORBES, Sir William, an eminent Scottish banker, was born at Edinburgh, in 1739. His father, who was bred to the Scottish bar, died when Sir William was a child, and he was removed with his mother to Aberdeen, where he received the early part of his education. In 1753, he returned to Edinburgh, and was received as an apprentice into the banking establishment of Messrs Coutts. His apprenticeship lasted seven years, during which he continued to live with his mother in a frugal manner, but in the enjoyment of the best society of Edinburgh. After its expiry, he acted for two years as clerk in the establishment, during which time his increasing emoluments enabled him to make a considerable addition to the comforts of his mother, whose happiness was ever the chief object of his care. In 1761, his excellent abilities and application to business induced the Messrs Coutts to admit him as a partner, with a small share in the banking-house, and he ever after ascribed his good fortune in life to the fortunate connection thus formed with that great merchant's family. But without being insensible to the benefits arising from such a connection, it is perhaps more just to ascribe it to his own undeviating purity and integrity of character, which enabled him to turn to the best advantage those fortunate incidents which at one time or other occur to all in life, but which so many suffer to escape from negligence, instability, or a mistaken exercise of their talents.

In 1763, one of the Messrs Coutts died, another retired from business through ill health, and the two others were settled in London. A new company was therefore formed, consisting of Sir William Forbes, Sir James Hunter Blair, and Sir Robert Herries; and although none of the Messrs Coutts retained any connection with the firm, their name was retained out of respect to the eminent gentlemen of that name who had preceded them. The business was carried on on this footing till 1773, when the name of the firm was changed to that of Forbes, Hunter, and Co., which it has ever since been; Sir Robert Herries having formed a separate establishment in St James Street, London. Of the new firm, Sir William Forbes continued to be the head from that time till the period of his death, and to his sound judgment and practical sagacity in business, much of its subsequent prosperity was owing.

In 1770, he married Miss Elizabeth Hay, eldest daughter of Dr (afterwards Sir James) Hay, a union productive of unbroken happiness to his future life.

The benevolence of Sir William Forbes's character, his unwearied charity and activity of disposition, naturally led to his taking a very prominent share in the numerous public charities of Edinburgh. In plans for the better management of the charity Work-House, the Orphan Hospital, and the erection of the High School, he was actively engaged. He was also an active promoter of the society of Scottish Antiquaries, the institution of trustees for the encouragement of manufactures and fisheries, and the establishment of the present Lunatic Asylum. He was also one of the most zealous of those who promoted and carried to a happy conclusion the erection of the South Bridge; one of the most useful and successful of the improvements of Edinburgh. Sir William was a warm adherent of the Scottish Episcopal church, to promote the benefit of which he was unwearied in his exertions. Chiefly by his own efforts, and those of his son, the late Sir William, the Episcopal communion of Edinburgh was raised from the most obscure situations in the old town, and placed in two beautiful edifices, raised at an expense of above [illegible]. Taking the principal lead in connection with that communion, he was mainly instrumental in bringing to Edinburgh the late Rev. Mr Alison, the well known author of the Essay on Taste, from a comfortable rectory in Shropshire.

Sir William's success in trade enabled him, about the year 1781, to acquire the estate of Pitsligo, in Aberdeenshire, by purchase, and thus he realized an early and favourite wish of restoring to his ancient family their paternal inheritance. A wide field was now opened for his active benevolence of disposition. He commenced improvements on [illegible] liberal scale; laid out the village of New Pitsligo, and gave every assistance to the feuars. Numbers of poor cottars were established by his care on the most uncultivated parts of the estate, most of whom not only paid no rent for the land they occupied, but were pensioners on his bounty.

In 1768, he spent nearly a twelvemonth in London, in Sir Robert, then Mr Herries's family; and such was the opinion formed of his abilities even at that early period, that Sir Robert anxiously wished him to settle in the metropolis in business; but though strongly tempted to embrace this offer, from the opening which it would afford to London society, of which he was extremely fond, he had sufficient good sense to withstand the temptation, and prefer the more limited sphere of his own country as the scene of his future usefulness. But his residence in London at that time had a very important effect upon his future life, by introducing him to the brilliant, literary, and accomplished society of that capital,—Dr Johnson, Mr Burke, Sir Joshua Reynolds, Mr Gibbon, Mr Arbuthnot, and a great many others. He repeatedly visited London for months together at different times during the remainder of his life, and was nearly as well known in its best circles as he was in that of his own country. At a very early period of his life he had conceived the highest relish for the conversation of literary men, and he never afterwards omitted an occasion of cultivating those whom chance threw in his way; the result of which was that he gradually formed an acquaintance, and kept up a correspondence, with all the first literary and philosophical characters of his day. His taste in this respect probably suggested to him the idea of writing the life of Dr Beattie, the author of the Minstrel, and one of his earliest and most valuable friends. He executed this work accordingly, which appeared in 1805, shortly before his death, and in such a way as to give the most favourable impression of the distinction which he would have attained as an author, had his path in general not lain in a more extended and peculiar sphere of usefulness.

Besides his other qualities, Sir William was a good draughtsman; was well acquainted with music, and by his efforts contributed much to form the concerts which in his day formed so prominent a feature of the Edinburgh society. His conversational powers were considerable, and his store f anecdotes very extensive. He likewise supported the utmost of his power, every project for the amusement and gratification of the young, in whose society he always took great pleasure. He was not less remarkable for his unambitious views. He was frequently offered a seat in parliament, both for the city of Edinburgh and the county of Aberdeen; but he uniformly declined the offer. In 1799, he was offered an elevation to the peerage, by which the family title of Pitsligo might have been restored; but this honour he likewise respectfully declined.

In 1802, Sir William had the misfortune to lose ly Forbes. In May 1806, he began to feel symptoms of shortness of breath, and his sufferings for many months were very severe. He died on the th of November, 1806. He was succeeded in title and estates by his son, the late Sir William, a man of the most amiable and upright character, who having been cut off in the middle of his years of usefulness, was succeeded by his son, the present Sir John. The subject of the present sketch left a large family. Besides lord Medwyn (a senator of the college of justice), and Mr George Forbes, who have succeeded to the unwearied activity and benevolence of their father's character, he left five daughters.

FORE, FOURE, OR FOWRE, is an ancient corporate town in the parish of the same name, and the barony of Demifore, in the county of Westmeath, Leinster. It is a place of very trifling importance at the present day, though it sent two members to the Irish House of Commons up to the period of the union. It is situated upon the north side of the hill or rising ground which interposes between it and Lough Lene.

At the foot of the town are the ruins of an ancient monastery. This was a priory of canons regular, built by St Fechin, about the year 630; the founder died of the plague in 665, after having, as is said, ruled over three thousand monks in this abbey. The annals of the abbey make us acquainted with some particulars concerning the town. The records of the years 827, 870, 970, 1025, 1086, 1095, 1112, 1114, 1149, and 1169, are but a series of plunderings and burnings. In 1025, the "Ferman Fechin, or glebe lands of Fore, were plundered and burnt by the tribe of Criochan, on the eve of the nativity." In 1209, Walter de Lacie refounded this abbey, under the invocation of St Taurin and St Fechin, for monks of the order of St Benedict, whom he brought for that purpose from the abbey of St Taurin, in Normandy; he made it a cell to that Norman abbey, since which period it has generally been called the priory of St Fechin and St Taurin. We learn, also, from these annals, that in the year 1436, on the 26th of May, king Edward III. laid a tax by letters patent, to continue for twenty years, on all things brought to market in this town, or within three miles of the same, or in the towns of Molingar and Multifernam, and within three miles of the same, also on all goods going out of the said towns,—for the purpose of raising a sum of money sufficient to defray the expence of paving the town, and to build a ditch or stone wall for the better security of his Majesty's English subjects against their Irish enemies, who had thrice burnt the said town to the ground.

FORMATION; geological strata are divided into certain groups of one era of deposition, and frequently of the same or nearly similar mineralogical character, which have been denominated formations—such as the carboniferous, volitic, cretaceous, tertiary, silurian, &c. which see.

The following is the arrangement and succession of the various formations:

SEDIMENTARY STRATA.

Gneiss Mica slate Clay slate Chlorite slate Quarts rock Primary marble		Stratified primary series, containing no traces of organic remains.
Grey wacke Transition limestones Old red sandstone	Silurian system of Murchison.	
Mountain or Carboniferous limestone Carboniferous sandstone	Coal measures	Secondary series stratified, containing remains of plants and animals, for the most part extinct species.
Magnesian limestone New red sandstone	Salt Gypsum.	
Lias Oolite Green sand Chalk		
London clay Paris Basin, &c. Diluvium Alluvium		Tertiary series, or supracretaceous strata, containing the remains of marine animals, quadrupeds, birds, reptiles.

IGNEOUS OR PLUTONIC ROCKS.

Granite, Syenite Porphyry Greenstone—Basalt Lava	Unstratified, of different ages, more or less crystalline, destitute of organic remains.

FORFAR; a royal burgh of Scotland, capital of Forfarshire, is situated fourteen miles north from Dundee, and fifty-six from Edinburgh. It is a place of unknown antiquity, its privileges having been confirmed by a royal writ in 1669. The town has been, within the last few years, ornamented with a handsome suit of county buildings, situated in Castle street. A new church and steeple have likewise been built, as also a new episcopal chapel, in High street, finished in 1823. Being the seat of the county courts of the sheriff, the town has a number of public offices and legal practitioners. The town has now an excellent subscription news-room and library. Besides the established church and episcopal chapel, there is a meeting-house of the united secession body and methodists. The inhabitants are chiefly employed in the manufacture of canvass, sheeting, and other coarse linen, also in making the shoes called brogues. The parish is of an irregular figure, from four to six miles long, by three to five broad, and the surface, except the hill of Balnashinar, mostly level and fertile, the soil having been much enriched by the manure from Loch Restenet, which has been lately drained, and on the banks of which are the ruins of a priory, formerly subject to that of Jedburgh. The ancient castle of Forfar is totally demolished. Population of burgh and parish in 1831, 7949.

FORFARSHIRE, OR ANGUS; a county on the east coast of Scotland, bounded on the east by the north sea and Kincardineshire; on the west by the Grampian hills and Perthshire; on the north by the North Esk river and shire of Aberdeen; and on the south by the Firth of Tay. Its extreme length from east to west is thirty-eight and a half miles, and its greatest breadth from north to south thirty-seven and a half miles. It is said to contain eight hundred and thirty-one and a half square miles, or about 532,160 imperial acres. The great level valley of Strathmore runs through the centre of Forfarshire from east to west, and the lines of hills which flank this extensive and beautiful tract of country, with the Grampians on the north, and some minor ranges on the south, may be said to form the county into a series of continuous ridges, generally pursuing a direction from west to east, interrupted here and there by the different rivers and streams seeking their way to the sea, and which, notwithstanding the courses of the hills, in most instances follow a south-easterly direction. The portion of the Grampian mountains in this shire contains many fine valleys, and from the summit of these elevations to the ocean on the east and the Tay on the south, the surface of the land may be considered an inclined plane facing the meridian sun, with the exception of the territory on the northern side of the Sidlaw hills. In viewing the county from the Fife side of the Tay, the Sidlaw range appears to rise at no great distance from the estuary, and extending from the east towards Perth, shuts out a prospect of the interior. The highest of these Sidlaws is not much more than 1700 feet above the level of the sea. From the summit of the highest Grampian hill, a fine prospect can be obtained not only of almost the whole country adjoining the Tay and of the ocean, but of the eastern part of the peninsula of Fife, the coast of East Lothian, and the heights of Lammermoor. With the contiguous county of Kincardine on the north, Forfarshire anciently formed the country of the *Horesti*, and a portion of the Pictish kingdom. On the dissolution of that government by Kenneth II., about the end of the ninth century, he is said to have divided it between his two brothers, Angus and Mearns, from whom the two counties still derive their popular appellation. The district gave the title of Earl to two different families. On the extinction of the first, the earldom was conferred on a relation of king David Bruce, and in 1477, it merged in the family of the Douglasses. It has since devolved on the duke of Hamilton. In ecclesiastical matters, Angus and Mearns form a synod of the established church, comprehending six presbyteries.

Forfarshire is now a highly cultivated county, having advanced as far as any in Scotland in agricultural improvement. Its chief rivers are the North and South Esk, which rise near each other, on the northern confines of the county and the Tay. The salmon fisheries on these are very valuable, great quantities of fresh salmon, packed in boxes of ice, being sent from them to the London market. The county is also watered by numerous fine trout streams. It abounds in freestone and limestone, but is destitute of coal, being dependent on the Fife and Newcastle collieries for that essential article of fuel. In the Grampian district peat is chiefly used. The spinning of flax and the manufacture of linen, sail-cloth, osnaburgs, &c., form the chief trade of the county. Forfarshire comprises nearly fifty-three complete parishes, in which are the five royal burghs of Dundee, Arbroath, Montrose, Brechin and Forfar, and the towns of Glammis and Kirriemuir. A large proportion of the inhabitants, especially of the wealthier class, are attached to the episcopal church, and their adherence to the principles of this communion is particularly noticeable in the number of episcopal chapels all over the district. There are a number of old ruinous castles in Forfarshire, most of which have gone into decay, in consequence of the baronies on which they stand having passed into the hands of proprietors of other estates. Population in 1821, 113,430; in 1831, 139,606.

FOTHERINGAY; a village in the north-eastern part of Northamptonshire, near Oundle, noted as the place where Mary queen of Scots was beheaded. The castle, now in ruins, was the scene of many historical events. This structure was originally founded by Simon St Liz, second earl of Northampton, in the time of William the Conqueror. It was rebuilt by Edmund, duke of York, son of Edward III.; the keep was built in the form of a fetterlock, which, with the addition of a falcon in the centre, was the emblem of the family of York. The same figure, in stained glass, was emblazoned in most of the castle-windows. By marriage, it became the property of the Scottish kings; but in the reign of John, David, king of Scotland, was summoned to surrender the castle to the crown of England; and refusing to comply, the sheriff was directed, by royal mandate, to bring him to submission. In this castle Richard III was born; and Mary, queen of Scots, after having suffered a long imprisonment, was tried and condemned in the hall, in the year 1586, and shortly afterwards executed.

In the reign of James I., a few years after the execution of his mother, the condition of the castle, ascertained by proper inquisition, was as follows:—

The castle was built of stone, and surrounded a fair court, being itself encompassed by a double moat. The great dining-room was well garnished with pictures, the hall large and spacious, the lodgings were goodly; there was a convenient yard for wood, large brewhouses, and a capacious barn. On the south side the river Nene formed the moat, and the inner moat was formed by the mill-brook. The demolition of the castle by James was intended to mark his indignation at the execution of his mother. In 1787, when Mr Nicholls visited the site, he remarked that "almost all the materials have been carried away, and even the foundations dug up, for the purposes of building, and for repairing the roads, causeways, and banks of the river. The palace was situated on the south-east side of the castle-hill, fronting the river that runs below, commanding a most beautiful prospect over the extensive meadows into the south. The porch, or entrance, except a small fragment, has been taken down within these few years. A farm-house has been built on the spot occupied by the old stables." Mr Nicholls says that the hall where Mary was beheaded was on the first ascent, and the keep on the second. There was an excellent specimen of an old hostelry existing in 1787, which was then still used as an inn.

The village has not a population of three hundred souls. The fair and market which it once possessed have long ceased to attract sellers and buyers. A nunnery which existed here was transferred at an early period to another place. In 1411 a college was begun for a master, twelve chaplains, or fellows, eight clerks, and thirteen choristers. Henry IV., and Edward, duke of York, who was buried at Fotheringay, were the co-founders of this institution, which was not dissolved until the reign of Edward VI. As Leland remarks of the village—"The glorie of it standeth by the paroch church of a fair buildid and collegiated." It contains an ancient stone pulpit and a fine font.

FURNESS ABBEY, at one time an extensive and important monastic establishment, which now forms a series of splendid ruins. It is situated in Lancashire, in the parish of Dallon in Furness, and hundred of Lonsdale, distant from Ulverstone seven and a half miles. The abbey was founded by king Stephen, and was of the Cistercian order. It rose high in rank and power, and its ruins are to this day among the most splendid monuments of architectural antiquity in the county. Professor Wilson has celebrated it in a poem of considerable extent, entitled, "An Evening in Furness Abbey."

FUR-TRADE. (*a.*) The fur-trade of North America has long been an extensive and lucrative one. So early as 1670, a company was established, termed the Hudson's Bay Company, which exists under the same name to the present day, and has always possessed a large share of the traffic. Numerous other companies have sprung up from time to time with the same views; of which the North-west, the North American, and the Columbian companies, have been the most important and successful. In all these establishments, the natives are the principal collectors of the furs, which they barter for arms, and such other commodities as civilized nations can alone manufacture. Only two companies, properly speaking, now exist; the Hudson's Bay Company having been of late years incorporated with the North-west one. The shareholders of this establishment are almost all of them British merchants, resident in London. With respect to the other companies, the North American was composed of a body of New York merchants, and the Columbian likewise was supported by the inhabitants of the United States. The latter of these companies confined its operations to the Mississippi and St Peter's river, while the American company held possession of the trade on the Upper Mississippi, Missouri, and the great lakes. After existing separately for many years, these establishments were united, and still continue so. The Hudson's Bay Company, again, as its name implies, trades in the more northern regions of the new world, occupying, with its numerous branches and stations, the whole range of country between the lakes and the arctic sea. Private adventurers, and smaller firms, are to be found, besides, engaged in many quarters in the fur trade, but it can only be carried on efficiently by an enlarged combination both of men and capital. It is from this cause, rather than from privileges and charters, that the large companies have always enjoyed a monopoly, which smaller associations, rising now and then, could never disturb.

The most noted of the numerous establishments of the Hudson's Bay Company are Churchill Fort, York Factory, and Moose Fort, on Hudson's Bay; Fort William on Lake Superior; Norway House on Lake Winipeg; various forts and houses on the rivers which descend from the Rocky Mountains, such as Carlton House on the north branch of the Saskatchewan, Chesterfield House on the south branch, and Cumberland House on the united or main stream of the same river, which falls into Lake Winipeg; Fort Chipewyan on the Athabasca Lake, from whence Mackenzie set out on his two expeditions; Fort Resolution on Great Slave Lake; and Forts Simpson, Norman, and Good Hope, on the Mackenzie River; the latter is the most northerly establishment, and is about 3800 miles from Montreal. The furs, however, which are procured at the most northern establishments are shipped from Hudson's Bay. All the routes taken by the fur-traders are chains of lakes and rivers, connected by links of portages, some of them very toilsome to the voyageurs, or French Canadian boatmen, who must carry canoes and packages over them. From Fort William on Lake Superior to Cumberland House the distance is 1018 miles; from Cumberland House to Fort Chipewyan, 840 miles; from Fort Chipewyan to Fort Resolution on Great Slave Lake is 240; the Mackenzie issues from Great Slave Lake; the first fort on it, Fort Simpson, is 338 miles from Fort Resolution; the second, Fort Norman, is 236 miles lower down than Fort Simpson; and Fort Good Hope is 312 miles below Fort Norman, or 886 miles from Fort Resolution. Yet the clerks in charge of these forts (who are mostly all Scotsmen) look upon each other as neighbours.

Lord Selkirk and Sir Alexander Mackenzie have both left full descriptions, from personal observation, of the manner in which the details of fur-dealing are conducted. During Sir Alexander's connection with the trade in Canada, the North-West Company were in the habit of penetrating to the great distance of 4000 miles to the westward of Montreal. In the service of the establishment were fifty clerks, seventy-one interpreters, and 1120 canoe men. A great number of these individuals were Indians, or half-breeds, and their wives and children, who generally accompany the expeditions, amounted to about seven hundred persons. This great body of people embarked every spring, in different divisions, in slight canoes of bark, upon rivers newly freed from the ice, and coursed along them, encountering at every step difficulties and dangers, from rocks, rapids, and other natural obstacles. The slender boats were always heavily laden with provisions for the party, and goods of various kinds, particularly arms and clothing, to exchange for the furs. On reaching Lake Superior, where the company had their chief winter stations, the expedition met parties who had spent the winter there, engaged in collecting the furs, and two months were spent in the settlement of debts and other affairs. The furs were then packed in August, and embarked in a portion of the canoes for Montreal: while the remainder proceeded, with the articles necessary for the traffic, to different posts in the Indian country, there to remain in log-huts for the winter, and collect a fresh stock of skins. Sir Alexander Mackenzie spent many years of his life in this employment, and made those discoveries respecting the geography of the regions to the N. W. of the lakes, which revived the prospect of a north-west passage.

The annual quantity of skins collected by the North-West Fur Company, during Sir Alexander's connection with it, is stated by him as follows:—Skins of the beaver, 106,000; the bear, 2100; the fox, 5500; the otter, 4600; the musgreesh, 17,000; the marten, 32,000; the mink, 1800; the lynx, 6000; the wolverine, 600; the fisher, 1650; the racoon, 100; the wolf, 3800; the elk, 700; the deer, 1950. All these skins are brought to Britain, before being sent, either in a dressed or undressed condition, to the continental market. The purposes to which the different kinds of skins are put are exceedingly various, only a few of them being actually used as furs in clothing. Beaver-skins, for example, are in this country devoted now a-days almost entirely to the manufacture of hats. One portion, besides, of an animal's fur, is applied to purposes which the remainder is inapplicable to, and hence, in order to distinguish these different parts of the same animal's skin, new names are often bestowed on them. Thus the furs best known and most valued in this country, are ermine, lynx, sable, fitch, American squirrel, chinchella, and silver bear, some of which are derived from animals mentioned in Sir Alexander Mackenzie's list, while others are from animals which do not appear to have been then in use in the trade. Of all these furs, ermine is the finest, and one of the most expensive. A skin, purely white in the body, and black at the end of the tail, is considered as of the best quality. Many attempts, of course, are made to imitate ermine, by dying inferior skins. Fitch, sable, and lynx, are the most durable of furs, and bear a high value. The squirrel and chinchella furs are exceedingly elegant, but do not last very long. They are of a grayish tint. Fine bear-skins are of great value in the fur trade, and are manufactured into articles of much beauty as well as durability. It ought to be mentioned, that the fur companies trade extensively in buffalo-skins, though no furs are derived from any animal of that class. An immense number of animals of other kinds are also frequently killed in the arctic regions, the bodies of which serve as food to the hunting parties. A party of eighty men killed and consumed, in one winter, 90,000 white partridges, and 25,000 hares. The waters of Hudson's Bay are stocked with the grampus, seal, narwal, sea-horse, and other creatures, of which many hundreds are killed annually, and their skins, particularly those of the seal tribe, added to the general store.

The importations of fur-skins into England in 1835 were:—

	British North American Colonies.	United States.	Total from all Countries.
Bear,	4,[illegible]	[illegible]	[illegible]
Beaver,	[illegible]	[illegible]	[illegible]
Fitch,	12	[illegible]	[illegible]
Marten,	71,0[illegible]	[illegible]	[illegible]
Mink,	[illegible]	[illegible]	[illegible]
Musquash,	1,147,73[illegible]	[illegible]	[illegible]
Nutria,	4	—	[illegible]
Otter,	17,[illegible]	[illegible]	[illegible]
Seal,	[illegible]	[illegible]	[illegible]

The numbers re-exported in the same year of those species of which the Custom-house Returns have been given, were:—

Countries to which exported.	Bear.	Marten.	Musquash.	Otter.
Russia,	831	—	—	—
Prussia,	86	—	—	[illegible]
Germany,	8,753	5,106	[illegible]	[illegible]
Holland,	207	361	[illegible]	[illegible]
Belgium,	—	[illegible]	—	—
France,	1,663	[illegible]	—	—
Italy,	[illegible]	—	—	—
Turkey,	—	[illegible]	—	—
China,	—	—	—	[illegible]
U. S. of America,	146	[illegible]	[illegible]	[illegible]
	11,414	17,[illegible]	[illegible]	[illegible]

In 1836 the number of undressed furs entered for home consumption was:—Bear, [illegible]; beaver, 87,473; cat and lynx, 58,937; coney, [illegible]; ermine, 284,4[illegible]8; fitch, 122,741; fox, [illegible]; marten, 197,804; mink, 62,467; musquash, 784.379; nutria, 1,32[illegible],017; otter, [illegible]; [illegible], 1525; and squirrel, 2,236.725.

An idea is entertained by some persons that the races of wild animals whose skins are an article of commerce will some day be extinct, owing to the rivalry of traders; and it may follow that furs will be so scarce as to be handed down from one generation to another by will, as was the case a few centuries ago. This however is an [illegible] not likely to be realized. The textile materials of dress, especially wool, are much superior in their quality, and, when in a manufactured state, form a better protection from the weather than at any previous period; and we are consequently past the age of wearing skins, which, in the history of costume, precedes the improvement of manufactured fabrics. But if the extermination of wild animals should nearly ensue, the supply of furs would not on that account cease, as a sufficient number of animals would be domesticated solely for the sake of their skins. This is already done to some extent in the north of Europe. Mr Laing, in his interesting "Notes on Norway," says—"The fur or skin used for their winter pelisses by the [illegible] people is really handsomer, although much cheaper, than that of the wolf or bear. It belongs to a particular kind of dog, with a remarkably fine, [illegible], and glossy fur. These dogs are bred for the sake of their skins; and it appears to me that many of the best of the dark brown or black muffs and tippets of our English ladies are merely well-coloured skins of these Fjelde dogs. A pelisse of such [illegible] costs about £3 9s., while that of wolf-skin [illegible] from £7 10s. to £9 10s." J. H. Pelly, [illegible], Governor of the Hudson's Bay Company, in [illegible] evidence before a committee of the House of Commons, March, 1837, says that the Company [illegible] maintain beaver preserves in their territories.

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GADOLINITE; a rare Swedish mineral, containing the very scarce earth *Yttria*.

GAINSBOROUGH; a market-town of England, in the county of Lincoln, situated on the east bank of the Trent, 149 miles N. by W. from London. It consists chiefly of one long street running parallel with the river, and is a place of considerable foreign as well as inland trade, for which its situation is well adapted. The Trent is here navigable for ships of 200 tons burden, and by different canals it extends its navigation through the interior of the country. The tide rises here very rapidly. The place is of considerable antiquity: It was here where Alfred the Great celebrated his nuptials in 868. Population in 1831, of town 6658; of town and parish 7535.

GALACZ; a port of the Danube, in Moldavia, in lat. 45° 25′ N., long. 28° E. Its population amounts to about 12,000. Of late, this place has risen into considerable importance as a place of commerce, and steam-boats have been established between it and Constantinople and Trebezon and the Black sea. There are also steam-boats from Presburgh in Hungary to Galacz. The main trade is carried on by Greek merchants.

GALASHIELS; a thriving town in Selkirkshire, Scotland, situated on the right bank of the Gala, a small river celebrated in Scottish song; distant from Edinburgh about thirty-one miles, and five from Melrose. The old village of Galashiels, which was merely an appendage of the baronial seat of Gala, in the vicinity, is now abandoned and destroyed. The present town is of comparatively modern erection, having been begun not more than fifty years since, on the people manifesting a tendency to remove nearer the river, in order to engage in manufactures. It consists of one long street, with some by-lanes, and scattered clusters of houses, all built of blue whinstone, and slated. The inhabitants are remarkable for their persevering industry and enterprise in the woollen manufacture. Galashiels ranks, indeed, as the first town in Scotland for the manufacture of woollen cloth, and the spinning of woollen yarn. Situated in the midst of an extensive pastoral country, which yields an abundance of wool, it has adopted almost the only species of manufacture and traffic it had a chance of prosecuting with success, and although labouring under the serious disadvantages of having expensive inland carriage, and being at a considerable distance from coal, it has overcome such difficulties, and is now a flourishing little place. The parish, which comprises the ancient parishes of Bolside and Lindean, is, besides the Tweed, intersected by the Etterick and the Gala, both celebrated among the beautiful pastorals of Burns. It contains about 8900 acres, the surface of which is hilly, and in some parts mountainous; Meg-Hill, rising to the height of 1480 feet above the level of the sea, but affording the finest pasture for sheep, in rearing which, principally for the sake of the wool, great attention is paid by the proprietors. Schistus and whinstone abound here; and the presence of red ochre, chalybeate springs, &c., indicate also the existence of iron. Population in 1831, 1534.

GALT, John, an eminent Scottish novelist and miscellaneous writer, was born at Irvine, in Ayrshire, May 2, 1779, being the eldest son of a person engaged in mercantile pursuits. He spent his first ten or eleven years at Irvine, and there received the rudiments of his education. Being a sickly boy, he became addicted to study, and he used to take great pleasure in hearing tales of foreign adventure from any one who could relate such to him. In his eleventh year, the family removed to Greenock, where he pursued his studies at the public school, under Mr Colin Lamont, and prosecuted still farther his taste for reading, which was much facilitated by an excellent public library to which he had access. He also manifested a turn for mechanics, which, joined to a taste for music, prompted him to attempt the construction of a small piano-forte or hurdy-gurdy, and likewise an Eolian harp. In these early years he composed some pieces of music, one or two of which became popular. What gives a more striking proof of the early developement of his reflective powers, is, that he conceived the idea of several local improvements of great magnitude and importance, some of which have since taken place. He formed an intimacy with a young man of taste and talent, Mr James Park, who appears to have been of great service to him. The two youths cultivated the belles lettres together, and mutually criticised each other's productions. It does not appear that Mr Galt distinguished himself at school: he was thought, even by his mother, to be a dull and sleepy boy, which was in a great measure owing to the state of his health, which did not become good till he reached manhood. In due time he entered the counting-room of Messrs James Miller and Company, in order to learn the mercantile profession, and here he seems to have continued for several years. A circumstance much to his praise falls to be noticed at this period of his life. His father had intended to leave his mother independent; but, owing to some informality, on the death of the old gentleman it was found that his whole property fell into the hands of his heir-at-law, the subject of this memoir. Mr Galt instantly executed a deed, fulfilling the intentions of his father.

As he advanced into the full bloom of youth, Mr Galt entirely lost his inenergetic character, and became remarkable for that decision, which, whether for good or evil, ever afterwards characterized him. About the year 1804, having received an insult from a mercantile correspondent, he took upon him to resent it in a very prompt and stern manner, which seems to have rendered his situation at Greenock too unpleasant to be any longer endured. He accordingly went to London, and began a mercantile career in company with one M'Lauchlan, which ultimately proving unfortunate, he entered at Lincoln's Inn, with a view to the English bar, and meanwhile, for the sake of his health, in 1809, made a tour of the Mediterranean. At Gibraltar he encountered Lord Byron and Mr Hobhouse, in whose company he sailed to Sicily, and whose acquaintance he thus formed. From Sicily, he proceeded to Malta, and thence to Greece, where, at Tripolizza, he conceived a scheme for forming a mercantile establishment in the Levant, to counteract the Berlin and Milan decrees of Napoleon. The conception was instantaneous, and seemed at first so promising as almost to turn his brain. After touching at Smyrna, he returned to Malta, where he found Messrs Struthers, Kennedy, and company, apprised by Mr Kirkman Finlay's house in Glasgow, of a plan similar to his, which had been suggested by one of their partners resident at Vienna. He was astonished at the coincidence, but resolved to wait till the house at Malta should correspond with that at Glasgow respecting his scheme. In the meantime, he proceeded to inspect the coasts of the Grecian archipelago, and to ascertain the safest route to the borders of Hungary. After an exploratory expedition, in which he satisfied himself of the practicability of introducing goods into the continent by this circuitous channel, he returned by Sardinia and Gibraltar to Britain (August, 1811), landing first in Ireland. He busied himself for a time in applications to the government, on the subject of his Levant scheme, but found great difficulty in attracting any attention. Meanwhile, he prepared and published a quarto volume descriptive of what he had seen in his travels, being his first avowed work. It was not very favourably received, and has long passed out of notice. He never reaped any good from the project which had occupied his thoughts so much, though it was soon after acted upon to a considerable extent and with advantage to those concerned. Mr Kirkman Finlay proposed to give him a principal share in superintending a mercantile concern established by his house at Gibraltar, and he closed with the offer. At Gibraltar, however, he found himself out of his element: he confesses he never could lay his heart to any business in which the imagination was not engaged. His health became bad, and the concern was ruined by the successes of the Duke of Wellington in Spain. He returned to London, and soon after became connected with the *Star* newspaper, and married Elizabeth, daughter of Dr Alexander Tilloch, proprietor of that paper, and editor of the Philosophical Magazine, by whom he had a family. He also published about this time the Life of Cardinal Wolsey, 1812, 4to; Reflections on Political and Commercial Subjects, 1812, 8vo: Letters from the Levant, 1813, 8vo; the Life of Benjamin West, 1816, 8vo; the Majola, a tale, 1816, 2 vols; and a number of minor biographies and plays, the most of the latter appearing in a periodical work called the Rejected Theatre. But his first really successful appearance as an author was in a series of articles, which appeared in the year 1820, in Blackwood's Magazine, styled "The Ayrshire Legatees." In this work, which eventually formed a separate volume, he showed a power of delineating a certain line of Scotch characters, that struck the public mind, especially in Scotland, very forcibly. Sir Walter Scott had already given some admirable pictures; but he had never come so exactly into the very heart of a real Scotch matron of the middle ranks, as Mr Galt now did. Mr Blackwood saw that this was a new vein, and he encouraged Mr Galt in prosecuting it. A volume, written earlier, but for some years neglected, was now published, under the title of "The Annals of the Parish." It was intended by the author as a kind of Scottish Vicar of Wakefield; and it certainly possesses much of the household humour and pathos of its admirable model. About this time, the author had come to Scotland, chiefly with a view to the education of his children; and for some years he lived in Eskgrove House, near Musselburgh. He now issued in rapid succession, The Provost, The Steamboat (each one volume), Sir Andrew Wylie, and the Entail (each three volumes), and the Gathering in the West, which related to the flocking of the west-country people to Edinburgh at the period of the king's visit. In all of these works, the peculiar vein of Scottish character which Mr Galt had hit upon, formed the main attraction, and their merits were upon the whole handsomely acknowledged by the public. It could only be urged by critics of strictly just taste, that there was an unfortunate coarseness in many of Mr Galt's pictures, and a mean style of moral feeling in many of his characters, which could not justly be considered as a fair representation of the people from whom they professed to be derived. Another series, published by Messrs Oliver and Boyd, consisted of Ringan Gilhaize, The Spaewife, and Rothelan. They fell under the denomination of historical romances, and were not generally deemed happy efforts. Upon the whole, any distinctive merit which Mr Galt possessed as an author, may be said to have been exclusively in his power of describing a homely specimen of his countrymen, which he almost always did with truth and effect, though, as estimated, with far too much of the selfish feeling attributed to the character. He generally failed in any higher flight.

From about the year 1824 to 1830, Mr Galt was occupied in the business of acting manager and superintendant of the business of an emigration company in Upper Canada, which required his almost constant residence in that country and appears to have yielded him a salary of a thousand a year. The company, however, did not at first prosper, and he was discharged at the last, in what appears to have been a very harsh manner. The consequence was an embarrassment in his affairs, which obliged him to become bankrupt. In London he again commenced the business of an author, and produced in quick succession, Lawrie Todd (a singularly happy and successful novel), Southennen, Bogle Corbet, Stanley Buxton, [illegible] Eben Erskine—all of which were in three volumes each—with the Life of Lord Byron (written for the National Library), the Lives of the Players (2 vols. for the same series), the Member and the Radical, political tales in one volume each. In the midst of these honourable exertions for the support of his family and the discharge of his [illegible] —for both objects seem to have been in his view, and the latter to a certain extent accomplished— he was, in July 1832, struck with paralysis, [illegible] was removed to his relations in Greenock, where he remained an invalid till his death, on the 11th [illegible] April, 1839, having been visited by a [illegible] paralytic shocks to the amount of fourteen, [illegible] although they deprived him of the power of [illegible] limbs, and latterly even of the power of [illegible] pen, still left his mental faculties so far [illegible] as to enable him, during his illness, to write [illegible] dictate his Autobiography, 2 vols., his Literary Life and Miscellanies, 3 vols., besides a variety of minor tales and sketches, which appeared in the Magazines and Annuals. Among his latest productions was a tale, called The Bedral, which was not inferior to his Provost Pawkie. Mr Galt, it will be seen, was a most prolific author, and yet the works we have mentioned form by no means a complete list of his publications. He himself was unable to furnish one. In a list which he made, he forgot an epic poem—and he afterwards jocularly said, that he should be remembered as one who had published an epic poem, and forgot that he had done so. Literature with him was but a secondary pursuit, and his mind was chiefly engrossed by mercantile or mechanical projects. During his last illness at Greenock, this "ruling passion" strongly displayed itself. He had a variety of schemes, to which he invited the attention of the scientific world, among others a plan for deepening the Clyde up to Glasgow, by erecting a dam, with lock, at Bowling Bay. This, he said, was the legacy he left to Glasgow, in gratitude for the many good deeds done to him by inhabitants of that city. Mr Galt was in person tall and muscularly formed, his manners being frank and agreeable. During much of his life he moved in the best circles of society; and it is not the least curious circumstance in his character that, with so much high-spirited gentlemanly feeling in himself, he should have mainly succeeded in depicting the meaner and more grovelling points in human nature.

GELL, Sir William, Knt., M.A., F.R.S., and F.S.A., a member of the Society of Dilletanti, &c. was the younger son of Philip Gell of Hopton, Derbyshire, Esq., by Dorothy, daughter and coheiress of W. Milnes, of Aldercar Park. Esq., who was secondly the wife of Thomas Blore, Esq., F.S.A., the historian of the county of Derby. He was formerly Fellow of Emanuel college, Cambridge, where he graduated B. A. 1798, M. A. 1804. His learned and valuable works were produced in the following order:—The Topography f Troy and its Vicinity, illustrated and explained y drawings and descriptions. 1804. fol. The eography and Antiquities of Ithaca. 1808. 4to. he Itinerary of Greece, with a Commentary on ausanias and Strabo, and an account of the mon-ments of antiquity at present existing in that ountry. 1810. 4to. The Itinerary of the Morea; eing a particular description of that Peninsula, ith a map of the Routes. 1817. 8vo. Pompeiana; Observations upon the Topography, Edifices, d Ornaments of Pompeii. By Sir William Gell d J. P. Gandy, Esq., 1817—1819, 8vo. Second lume, 183-, 8vo. It was this work, equally autiful and interesting, which made his name st extensively known. Attica. 1817. folio. rrative of a Journey in the Morea. 1823. 8vo. e Topography of Rome. 183-, 8vo. Sir Wil-m Gell received the honour of knighthood on a urn from a mission to the Ionian Islands, May 1803. In 1820 the late queen Caroline ap-nted him one of her Chamberlains, in which ca-ity he attended daily during the examination ich was called her "Trial," in the House of ds. Subsequently to that period Sir William resided altogether in Italy. He had a small se, surrounded by a pleasant garden, at Rome; a picturesque residence at Naples, which re-ded the visitor of some of his own drawings of Pompeii. Both were the daily resort of the scientific and literary visitants to "the Eternal City" or the gay "Parthenope;" and in his reception room in each he was seen, surrounded by books, drawings, and maps, with a guitar, from which he frequently drew forth pleasant discourse, and two or three dogs, so well bred as to be a source of amusement instead of annoyance to his visitors.

Sir William Gell's residence at Naples was for many years rendered peculiarly agreeable by its vicinity to that of his estimable and erudite friend, the late Sir William Drummond, with whom he lived on terms of affectionate intimacy; and whose death, which took place at Rome in 1827, he deeply lamented. The hon. Richard Keppel Craven had been for many years the friend of Sir William Gell. In 1834, Sir William's infirmities had increased so much that he was compelled to give up his residence at Rome, and remain stationary at Naples. Those who had opportunities of appreciating the character of this amiable man knew not which most to admire,—the depth and versatility of his erudition, the benevolent kindness of his heart, or the suavity of his manners. Suffering from the complicated tortures of gout and rheumatism, which for many years deprived him of the use of his limbs, his patient endurance of pain, and constant cheerfulness under it, endeared him to all who knew him. Science and literature had not a more devoted adherent, or more ardent admirer. Deeply skilled in antiquarian learning, the fruit of his indefatigable researches was ever at the service of others; and he was in every sense of the word a scholar and a gentleman. He died at Naples on the 4th Feb. 1836, aged 59. His body was interred in the English burial ground at Naples.

GEOLOGY, Recent Progress of. After Hutton and Werner had advanced their respective theories, an intellectual warfare of many years was rather fiercely waged between their followers. Although this excitement led to the elucidation of many important parts, yet it cannot be denied that much time and some talent were unprofitably lost in the contest, till at last the Wernerians, in the great points at issue, fairly gave in; and the leading *facts* at least of the Huttonian theory were universally established, namely, the igneous origin of granite and trap rocks, and the sedimentary nature of the other deposits. Meanwhile practical geology, founded on actual investigation, was making considerable progress, first in England, by the solitary and untutored labours of Mr Smith, who, almost unaided, produced a map of the English strata, arranged according to their organic remains, and the result of his own personal investigations; and afterwards by the institution of the London Geological Society, in 1807, which ranked among its members Dr Maculloch, the able investigator of the primary rocks, and of the trap formations of Scotland and its islands, Mr Conybeare, who, along with Mr Phillips, published a work on the secondary strata, as exhibited in the English districts from the carboniferous series, up to the oolite, and chalk, and Messrs Greenough and Webster, and professors Buckland and Sedgwick, Messrs Murchison, Lyell, &c., who have all contributed most valuable papers to its transactions. On the continent the celebrated Cuvier and his associates, Lamarck and Brogniart, were no less assiduous in their energetic investigations. The discoveries of Cuvier in the strata of the environs of Paris formed a new era in the history of organic remains, and gave an interest and impulse to the study of geology beyond what had been before experienced. Cuvier, indeed, may be said to be the Newton of geology, and had his attention been solely devoted to this science, or rather could he have had his ever active existence prolonged beyond the period of humanity, we might have hoped from his acute and comprehensive intellect, joined to his laborious investigation of facts, as complete an elucidation of the phenomena of geology as Newton has bequeathed us of the solar system.

Of the more recent systems of geology, Mr Lyell's is the most conspicuous. In its leading features it is identical with that of Dr Hutton, and of his classical illustrator, Mr Playfair. Mr Lyell maintains the same infinitude of operations, the same wearing down of old continents, and the resurgence of new ones. He, however, disclaims the interference of all causes except those that are strictly in operation at present, not even allowing an intensity of power beyond what is daily manifested on the earth's surface. In this way he rejects the paroxysmal fusions and elevations of rocks by the unexplained "central heat" of Hutton and Playfair, and accounts for the elevation of strata to the slow and progressive effects of igneous action, as exemplified in existing volcanoes. Thus an infinitude of movements, consisting of a progressive decay and renovation of strata, graduating by imperceptible steps into each other, make continually the circuit of the earth's crust, and to accompany these movements in the inorganic mass a progressive development and destruction of animal and vegetable life take place coincidently, so that system succeeds system, merging into, and embracing each other, like cycle and epicycle, where neither beginning nor end is perceptible. To elucidate these views, Mr Lyell has accumulated a mass of most interesting facts regarding volcanic phenomena, and adopting the hint of Cuvier, has personally investigated the newer strata in the volcanic districts, so as to enable him to trace a chain of formations from the oldest visible systems up to those which have had their origin in the present times. While these investigations were being made of the newer formations, Mr Murchison and professor Sedgwick were exploring the older sedimentary deposits in England and Wales. Many of these formations, which were at one time supposed to contain few or no traces of organic remains, were now found to exhibit many species of new and unknown molluscous and vertebrated animals. Fortunately, to aid the investigations of these zealous geologists, the researches of professor Aggasiz in ichthyology were at hand to throw light on the remains of fishes which were found in the older sandstones and slates. From their combined labours, the transition series of rocks hitherto undefined, were arranged into regular groups, characterized by peculiar fossils; and a splendid work was given to the public explanatory of this system. (See *Silurian System*.) Dr Maubel too, was labouring in the investigation of the fresh water formations of the wealds of Sussex, and made discoveries of the existence of huge reptiles, as well as plants and minute animals in that deposit (see *Wealden*), while Dr Hibbert was exploring the fluveabile limestones of the south of Scotland.

On the continent, Elie de Beaumont deduced his theories of periodical elevations of mountain chains, from an inspection of the parallelism of particular mountain formations; Bouè carried on his geological surveys; and Ehrenberg, by the aid of the microscope, showed that some of our solid tripoli stones and chalk masses owed their existence to millions of minute animalcules in a fossilized state; while in America, Dr Hitchcock traced the foot marks of gigantic birds, who had stalked over the ancient sand beds, and left the impressions of their footmarks alone behind. (See *Ornithicnites*.) The same zeal for geological investigation has been carried by young travellers into every region of the globe. In the lower range of the Himmala mountains, Dr Falconer and Capt. Cantly discovered the remains of several new mammalia, (see *Sivatherium*) and communications of interest are daily emanating from other cultivators of the science. "When we compare," says Mr Lyell, "the result of observations in the last thirty years, with those of the three preceding centuries, we cannot but look forward with the most sanguine expectations to the degree of excellence to which geology may be carried even by the labours of the present generation. Never perhaps did any science, with the exception of astronomy, unfold, in an equally brief period, so many novel and unexpected truths, and overturn so many preconceived opinions. The senses had for ages declared the earth to be at rest, until the astronomer taught that it was carried through space with inconceivable rapidity. In like manner was the surface of this planet regarded as having remained unaltered since its creation, until the geologist proved that it had been the theatre of reiterated change, and was still the subject of slow but never ending fluctuations. The discovery of other systems in the boundless regions of space, was the triumph of astronomy; to trace the same system through various transformations, to behold it at successive eras adorned with different hills and valleys, lakes and seas, and peopled with new inhabitants, was the delightful meed of geological research. Whether the investigation of the earth's history and structure will eventually be productive of as great practical benefits to mankind, as a knowledge of the distant heavens, must remain for the decision of posterity. It was not till astronomy had been enriched by the observations of many centuries, and had made its way against popular prejudices, to the establishment of a sound theory, that its application to the useful arts was most conspicuous. The cultivation of geology began at a later period, and in every step which it has hitherto made towards sound theoretical principles, it has had to contend against more violent prepossessions. The practical advantages already derived from it have not been inconsiderable, but our generalizations are yet too perfect, and they who follow may be expected to reap the most valuable fruits of our labour. Meanwhile the charm of first discovering is ours, and as we explore this magnificent field of inquiry, the sentiment of Niebuhr the great historian of old times, may continually be present to our minds, that "he who calls what is vanished, back again into being, enjoys a bliss like that of creating."

GHAZEEPORE, or GAZYPOOR; a town in Hindostan, long celebrated for its rose-water, is the capital of a circar or province of Hindostan of the same name. It is situated on the left bank of the river Ganges, forty-one miles north-east of Benares, and ninety two miles east of Allahabad. It is described by bishop Heber as a large town or city, and when viewed from the river, as presenting a very striking appearance though on a nearer inspection, its noblest buildings are, as is too often the case in Indian towns, found to be in a miserable state of ruin. The native city itself is, however, better built, and better kept, than many other places of more importance. The bazars are neat and well supplied, and bishop Heber, describing the place, says, "One of the streets was so wide, one might have supposed oneself in an English country town." But he adds, "the town has no large houses except one, the property of a wealthy Mussulman, which is extremely like some of the old houses in Scotland, as represented in prints, and described by the author of Waverley. Like all other native buildings, it looks dingy and neglected, but appears in good substantial repair, and is a striking object, more so, perhaps, than most of the Corinthian verandahs at Calcutta. There are moreover, the remains of an old castle here, now reduced to little more than a high green mound, scattered with ruins, and overhung with some fine trees."

Although the neighbouring population is chiefly Hindoo, a very considerable portion of the inhabitants of the town are Mussulmans. Their mosques here are more numerous, or at least more remarkable, than the pagodas. Indeed, although, taking the whole province together, they form but barely an eleventh part of the population, and amongst the remainder, Hindooism exists in all its strength and bigotry, yet as it is in the large towns that the Mussulmans chiefly abound, they sometimes appear here in such numbers, in the shops and streets, as to lead persons to believe that they bear a more considerable proportion to their Hindoo brethren.

"At the eastern extremity of the town," the bishop relates, "is a very handsome, though ruined palace, built by the Nawab, Cossim Ali Khan, the most airy and best contrived, so far as can be perceived from its outward appearance, of any of the eastern buildings I have seen. Its verandahs are really magnificent, but its desolation is so recent, that it is very far from being a pleasing object on approaching near enough to perceive its decay. It is approached from the land through a fine stone gateway, which, though differing in a few particulars from the English Gothic, certainly belongs to the same style of architecture. This is in good repair, and has still its massive teak folding-doors clenched with iron studs, and with the low-browed wicket in the middle, like an English castle or college.

"At the other extremity of the town, and separated from it by gardens and scattered cottages, are the houses of the civil servants of the company, mostly with ground-floors only, but large and handsome. They are surrounded by good gardens, and occupy picturesque situations amidst tame but luxuriant scenery, where the green lanes, flowering hedgerows, and receding glades, bring to mind some of the most cultivated portions of England. Beyond these is the military cantonment, ugly low bungalows, with sloping roofs of red tile, but deriving some advantage from the trees with which they are surrounded and intermingled. The most conspicuous building among them is the monument to lord Cornwallis, who died here on his way up the country."

Ghazeepore is noted for the wholesomeness of its air, and the beauty and extent of its gardens. The British regiments removed hither from the other stations, have, it is said, always found the number of their deaths diminish from the Indian to the European proportion.

The precious incense of the rose, the *atta-gool*, so celebrated throughout all the civilized parts of the world, is produced in considerable quantities in the gardens round Ghazeepore. The cultivation of roses at Ghazeepore is a mere matter of business, and the extensive fields, though planted with roses, do not appear so beautiful and attractive as might at first be imagined. The fact is, the Indian rose, though its very name seems to imply distinction, can only sustain a comparison with its European sisters in the fragrance which it yields. It is beautiful, for could a rose be otherwise? But excepting at Agra, it does not attain to the magnificent size common in England, nor does it present the infinite varieties which adorn our gardens. The roses of eastern climes bloom sparingly upon a low shrub, which is kept to a dwarfish size by the gardener's knife, and the full-blown flowers being gathered every morning, the trees rarely present the luxuriance of loaded boughs, drooping beneath the weight of their silken treasures. The roses of Ghazeepore are planted formally, in large fields, occupying many hundred acres in the neighbourhood. The flush of their flowers, when opening to the morning ray, and enamelling the verdant carpet of green spread over a sun-lit plain, cannot, however, fail to delight the eye. The gathering of the roses is performed systematically by a multitude of poor labourers, who carefully secure every full-blown flower. The first process which these undergo is that of distillation. The *goolăăbee păănee*, rose-water, thus obtained is poured into large vessels, which are exposed uncovered to the open air during the night. The jars are skimmed occasionally, the essential oil floating on the surface being the precious concentration of aroma which is so highly prized.

GILLIES, John, L L.D., F.R.S., F.A.S., member of many foreign societies, and historiographer to his late Majesty for Scotland, was born at Brechin, in the county of Forfar, on the 18th of Jan. 1747. He was educated at Glasgow, where, when under twenty years of age, he was chosen to teach the Greek class in the illness and decline of the then aged professor of Greek in that university. He soon, however, resigned that appointment, and came to London, with the view of making literature his sole pursuit; and, in furtherance of this object, he spent some time on the continent to acquire facility in the modern languages. Soon after his return, being yet a young man, that connection with the Hopetoun family commenced, to which he always ascribed much of the happiness and prosperity of his long life, this friendship having subsisted between them from that period without an intervening cloud. John, the second earl of Hopetoun, to whom he had been introduced by his eldest son lord Hope (the late James earl of Hopetoun), invited him to travel with his second son, the hon. Henry Hope, and induced him to relinquish some honourable and lucrative literary engagements, by settling upon him, in the year 1777, an annuity for life. Henry Hope died abroad, and a few years afterwards, Dr Gillies went again to the continent with the younger sons of the same earl of Hopetoun, John and Alexander Hope. Mr Gillies returned with his companions about the year 1784, when he resumed his literary labours, and took his degree of LL. D,, previously to the publication of the first part of his Grecian History. Upon the death of his friend Dr Robertson he was appointed historiographer to the King for Scotland. In 1794, he married. He continued his literary industry to a late period of life. The infirmities of age showed themselves principally in the weakness of the lower limbs, which made it dangerous to pursue his accustomed walks in crowded streets. Finding himself contented with domestic comfort, he retired altogether from the world, and settled at Clapham in the year 1830, where he died on the 15th Feb. 1836.

The following is a list of the works of Dr Gillies:—Orations of Isocrates and those of Lysias, translated; with some account of their lives, and a discourse on the history, manners, and character of the Greeks, from the conclusion of the Peloponesian war to the battle of Chæronea. 1778, 4to. History of Ancient Greece, its colonies and conquests, from the earliest times till the division of the Macedonian Empire in the East; including the history of philosophy, literature, and the fine arts. 1786, two vols. 4to. and four vols. 8vo. View of the reign of Frederic II., of Prussia, with a parallel between that Prince and Philip II., of Macedon. 1789, 8vo. Aristotle's Ethics and Politics, comprising his practical philosophy, translated from the Greek; with notes, the critical history of his life, and a new analysis of his speculative works. 1797, two vols. 4to. Second edition, 1804, two vols. 8vo. Supplement to the Analysis of Aristotle's Speculative Works. 1804, 4to. History of the World from Alexander to Augustus, 1807-10, two vols. 4to. Translation of Aristotle's Rhetoric. 1823.

GLAMORGANSHIRE; a county of South Wales, extending from east to west forty-eight miles, and from north to south, twenty-seven. It has one city, Llandaff; one county-town, Cardiff; is divided into ten hundreds, viz., Caerphilly, Cowbridge, Dinas-Powis, Kibber, Langwelach, Miskin, Neath, Newcastle, Ogmore and Swansea, and into 118 parishes. It returns two members to parliament, who are polled at Bridgend, Cardiff, Swansea, Neath, Merthyr-Tydvil. The north and north-east parts of the county are mostly barren and mountainous; the southern portion, on the other hand, is level and fertile. In the fine plain expanding from the foot of the mountains on the north to the Bristol channel on the south and south-west, known by the name of the Vale of Glamorgan, and extending the whole length of the county. The soil is deep and rich, and the salubrious temperature of the climate is such that the families of myrtles, magnolios, and other delicate plants, not only live but thrive in the open air. Here agriculture is practised upon the most approved principles, and the abundant produce of every description has procured for it the appellation of "the Garden of Wales." This valley, which is in many places from eight to eighteen miles in breadth, is divided from nearly one end to the other by the great post road from London to Milford. Passing along this road the traveller enjoys some of the most extensive and picturesque views that are to be met with in the whole island. The rivers of the county are the Rumney, the Taaf, the Ogmore, the Neath, the Tavy, the Avon, the Llanry, the Ewenny, and the Loughor. All of them have a southerly course, and several of them have their sources among the mountains of Brecon. The coast has a fine semi-circular sweep nearly the whole length of the county, the western point of which is formed into a peninsula by an arm of the sea running up towards Carmarthen, forming an estuary at the mouth of the Bury river. Over a fine sandy beach the limestone rocks in many places swell into perpendicular cliffs of great boldness, exhibiting many organic remains, and worn in many places into deep and lofty caverns. The canals of the county are the Glamorganshire canal, which extends from Merthyr-Tydvil to Cardiff, a distance of twenty-five miles. The Aberdare navigation unites with this canal at New-Bridge, and that again, by the Aberdare railway, is connected with the Neath canal, thus uniting Cardiff, Merthyr-Tydvil, and all the intervening country with the noble bay of Swansea. Another canal, running parallel to the river [illegible], connects the bay of Swansea with the distant and rugged hills of Brecon. The mineral wealth of the county consists principally of coal of various kinds, lime-stone, possessed of peculiar qualities, and iron-stone. Lying frequently at small depths from the surface, and frequently jutting out from the sides of the hills, these minerals are raised here with less expense than in most other places of the kingdom. The whole valuable mineral of the county, especially the southern part of it, rests on a bed of lime-stone. The most plentiful kind of this lime, though not the best for the purpose of building, is well adapted, from its extreme whiteness, for white-washing, and from its other qualities for manure; vast quantities are exported across the channel into Somerset, besides what is sent round the coast to other places in Wales. One kind of lime here possesses the property of hardening under water, which renders it highly valuable as a sub-marine cement. Beneath the limestone are found beds of red earth resembling tripoli, and in this earth are found beds of gypsum, the finest yet discovered in Britain. In the white limestone lead-ore, calamine, manganese, and copper have also been discovered though in small quantities. Coal, which is of still more importance, seems to be equally universal in its diffusion, and with iron-stone, which is also abundant, forms the great staple of the county. Of the former much is exported, and a vast quantity is more profitably employed in the immense smelting establishments of Merthyr-Tydvil, Neath, Swansea, Aberdare, and Abernant. The works at the former of these places, which are among the most extensive in Europe, are all iron-works, of which the mineral is dug up in the neighbourhood; but in different places, particularly Neath and Swansea, there are large establishments for the smelting of copper, the ore of which is imported from Ireland, Cornwall, and North Wales; lead is also brought hither for smelting in large quantities. Tin-plate is also manufactured to a large extent in some places, particularly at Merlin-Gruffyd, the tin being imported from Cornwall. Flags and marble are also articles of exportation, and give employment in cutting and polishing to a number of the inhabitants. Population of the county in [illegible] 126,200.

GLASTONBURY; a market-town of Somersetshire, situated nearly in the centre of the county, distant from London 124 miles W.S.W. It consists of two streets crossing each other nearly in the direction of the cardinal points, and many of the houses are built with stones taken from the ruins of its celebrated abbey. The foundation of this abbey is ascribed to Joseph of Arimathea, and Glastonbury is said to have been the place where the first Christian church was planted. The tradition," observes Mr Southey, "may seem the more deserving of credit, because it is not contradicted in those ages when other churches would have found it *profitable* to advance a similar pretension." There can, indeed, be no doubt that this tradition was one of the great causes of the high patronage and rich endowments which the abbey possessed from a very early period: and we may rest assured, that if in behalf of any other church in England an equal claim could have been advanced to the assumption of such titles as those conferred on Glastonbury, as "the first ground of God;" "the first ground of the saints in England," and "the rise and fountain of all religion in England," such a manifest advantage never would have been conceded to this establishment without many a struggle. Other accounts say that the abbey really owed its origin to David, a British prelate, in the fifth century, or to Ina, king of Wessex, who began his reign in 689, and by whom, according to William of Malmesbury, the monastery was erected and adorned with great splendour, and at a vast expense, and also richly endowed and favoured with various franchises and privileges, to which additions were made by several succeeding monarchs and other benefactors. It was constituted one of the parliamentary mitred abbeys, and the revenues, at its dissolution under Henry VIII., amounted to £3508. 13s. 4d. A series of abbots, sixty-one in number, presided here during a period of nearly six centuries; and the last of them, Richard Whiting, though he surrendered the abbey, was executed as a traitor, together with two of the monks, for refusing to acknowledge the king's supremacy. Many illustrious persons were interred in the church of this monastery, among whom is supposed to have been the famous king Arthur, whose tomb, with a Latin inscription, is stated, by Giraldus Cambrensis, to have been discovered here in the reign of Henry II. Some fine ruins of the abbey church are still remaining, as likewise a building called the Abbot's Kitchen; and a tower on a hill, near the town, named Glastonbury Tor, a noted sea-mark for ships sailing in the Bristol channel. The foundation plot upon which the Glastonbury abbey and its immense range of offices were erected, included a space of not less than sixty acres, and was surrounded on all sides by a lofty wall of wrought freestone. The principal building, the great abbey-church, consisted of a nave of 220 feet in length, and 45 in breadth; a choir of 155 feet; and a transept of nearly 160 feet; and with the chapel of St Joseph of Arimathea, which stood at its west end, 110 feet in length by 24 in breadth, its extreme length measured the vast extent of 530 feet. Adjoining the church on the south side, was a noble cloister, forming a square of 220 feet. The church contained five chapels,—St Edgar's, St Mary's, St Andrew's, the chapel of Our Lady of Loretto, and the chapel of the Holy Sepulchre. Under the body of the church were three large crypts, supported by two rows of massive pillars, in which lay entombed the remains of many of the most illustrious personages, and under St Joseph's Chapel was another large and handsome crypt, having, at one of its angles, an arched passage, which is said to have been traced for a considerable distance and supposed by some to have led to the Tor.

On the south-west side of Glastonbury may be seen *Weary-all Hill*, which is supposed to have taken its name from a belief instilled into the minds of the ignorant in former days, that here St Joseph and his companions sat down, *all weary* with their journey. From the stick also which Joseph stuck in the ground on that occasion, though then only a dry hawthorn staff, they say sprang the famous Glastonbury Thorn, which blossoms every year at Christmas. The tree, which was considered the original stock, had, in the time of Queen Elizabeth, two trunks, or bodies, when a puritan exterminated one of them. The other, which was of the size of a common man, was still an object of wonder and attraction, and the blossoms were esteemed such curiosities by people of all nations, that the Bristol merchants made a traffic of them, in exporting them to foreign parts. In the great rebellion, during the time of Charles I., the remaining trunk of this tree was also cut down, but others derived from it then existed. Absurd as is the account of the origin of this thorn, still there can be no doubt that it is an early variety of the common hawthorn, and has the property of sometimes flowering in December. Dr Maton says, "I have never seen the Glastonbury Thorn in fructification, but all the botanists who have examined it in that state, agree that it is no other than the common *Cratægus monogyna*. It is a fact, however, that the shrub here flowers two or three months before the ordinary time, and sometimes as early as Christmas-day, O.S., whence I conjecture it must be at least a *variety* of the above species, which may have been introduced originally by some pilgrim or other from the east."

An intelligent correspondent of the *Gardener's Magazine* thus writes on this subject:—"The unsatisfactory, and even contradictory, statements which occur in various works, both on systematic botany and on horticulture, respecting the Glastonbury Thorn, induce me to trouble you with this communication. Not that I consider myself able to give you full and satisfactory information on the subject, but I hope, at least to be enabled, from very long residence in the neighbourhood, to describe with accuracy whatever is known with certainty at Glastonbury about the plant in question. The popish legend about the staff of Joseph of Arimathea, I may be permitted to pass over in silence, and, therefore, come at once to the thorn-tree now standing within the precincts of the ancient abbey of Glastonbury; for there can be no doubt, that from this tree and its forefathers, (the present one being of great age,) all others of the kind had been propagated by budding or grafting. The most remarkable peculiarity of this tree, and in those descended from the same stock, is the time of flowering: it is now (December 31, 1832,) in blossom, and I transmit you a specimen for examination; it will again blossom in the month of May, and from these latter flowers fruit will be produced."

The town of Glastonbury, which is divided into the two parishes of Glastonbury-St-Benedict, and Glastonbury-St-John, contained in 1831, a population of 2984, the former parish being 483, and the latter 2501.

GLIADINE; the adhesive, elastic principle of gluten and birdlime, a substance found in all kinds of grain and leguminous seeds. It is very prone to fermentation, and when undergoing that change causes fermentescible fluids to ferment. It is the chief ingredient of yeast or ferment.

GLOUCESTERSHIRE; an inland county of England, bounded on the north-west by Herefordshire, on the east by Oxfordshire and a small part of Berkshire, on the south by Wiltshire and Somersetshire, and on the west by part of the latter county, the Bristol channel and Monmouthshire.

It is about seventy miles in length, forty in breadth, and 156 in circumference. Through a great portion of its length it is divided into two unequal parts by the river Severn. Its other chief rivers are the Wye, the Frome or Shroud, and the two Avons. The city of Gloucester is 102 miles north-west of London. From the several rivers above named, together with some others of less note, this country is rendered one of the richest, most fertile, and delightful parts of England.

This county is naturally divided into three distinct parts or tracts—the eastern, the middle, and the western; which have received the several names of *The Vale*, *Catswold*, and the *Forest of Dean*. The *Vale of Gloucester* manifestly derives its name from its situation; and the *forest* was probably called the "*Forest of Dean*" from the principal town in the district. Some, however, have supposed the word *Dean* to be a corruption of *Arden*, a name used by both the ancient Gauls and Britons to signify a *wood*. The eastern part, which is the widest of the three, is called the *Catswold*: the chief part of this tract is barren and moorlike, but affords excellent pasture for sheep, famous for their superior fleece, which has rendered this a celebrated clothing county. Originally, the sheep of this county were very small, but of late the breed, however, has been greatly improved by the introduction among it of sheep from other counties. The middle tract, called the *Vale*, is well watered by the Severn, and from its joining the Vale of Evesham, it is sometimes known by that name. The western part of Gloucestershire is a perpetual alternation of hills and small vales, which formerly was every where clothed with timber, which furnished the principal supplies for our navy. Much of this timber is now cut down, but the tract, even yet, is more of a forest than an agricultural district.

The chief natural productions of this county are iron and coal, of which it furnishes large quantities. Its chief manufactured products are woollen goods of various kinds, and cheese, for which it is very eminent.* It is likewise noted for perry and cider.

Gloucestershire is in the province of Canterbury and diocese of Gloucester, and is included in the Oxford circuit. The county is divided into twenty-eight hundreds, containing two cities (Bristol and Gloucester), one county town (Gloucester), twenty-eight market towns, three hundred and forty parishes and six parts of parishes.

Gloucestershire, before the Reformation, contained four of the great mitred abbeys, Gloucester, Tewkesbury, Winchcomb, and Cirencester, besides several smaller convents. The twenty-eight hundreds are Barton Regis, Berkeley, Bisley, Blidesloe, Botloe, Bradley, St Briavels, Brightwells Barrow, Cheltenham, Cleeve, Crowthorne and Minety, Deerhurst, Dudstone and King's Barton, Grumbald's Ash, Henbury, Kiftsgate, Duchy of Lancaster, Langley and Swineshead, Longtree, Pucklechurch, Rapsgate, Slaughter, Tewkesbury, Thornbury, Tibaldstone, Westbury, Westminster, and Whitstone. Besides Bristol, partly in Somersetshire, and Gloucester, its capital, the county contains the boroughs of Cirencester and Tewkesbury; and the market-towns of Berkeley, Bisley, Blakeney, Campden, Cheltenham, Coleford, Dursley, Fairford, Lechlade, Marshfield, Mitcheldean, Minchinhampton, Moreton, Newent, Newnham, Northleach, Painswick, Sodbury, Leonard Stanley, Stow-on-the-Wold, Stroud, Tetbury, Thornbury, Wickwar, Winchcomb, and Wotton Underedge.

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* *Gloucester Cheese.*—In the preparation of this cheese, the milk is, in the first instance, put into a cheese-cowl (which is a large deep tub) with two teacupsful of rennet. A ball of annatto is then dipped in the milk and rubbed on a piece of pantile, which is washed into the milk till the colour is as high as required. The quantity of annatto is regulated by the wishes of the cheesefactor, some liking more than others. Originally only a small quantity was employed, to induce the belief that the cheese was rich, and to prevent its being discovered that skimmed milk had been used. But now almost all the cheese is highly coloured; and the colour is no criterion of the goodness of the article. After an hour has elapsed, the milk is converted into curd; this is cut with a cheese-knife, which is about fourteen inches in length, and has two edges: it is cut gently at first, and then very small. It is suffered to remain ten minutes, when the milkmaid puts her arms into the cowl and draws the curd gently towards her, turning it over in the whey. She afterwards again draws it towards her to dip out the whey, which is strained through a sieve, and the small pieces of curd that are strained from it are returned to the cowl. The curd is then put into vats, in which cloth had been previously laid. The vats are placed one on another, and put in a cheese-press for ten minutes, a vessel having previously been placed underneath the press to catch the expressed whey. After this, the curd is taken out of the vats and broken small, and some hot whey is poured over it. The curd is then drawn to the side of the cowl to drain from the whey, which is ladled off and strained so that no curd may be wasted. Then the curd is again put into the vats, and they are pressed one on another; any curd that is pressed over the edges of the vats being put in the middle of the vats to make the [illegible] firm as possible. In an hour the vats are taken out of the press to have dry cloths, after which they remain in the press till night, when the compressed curd is taken out of the vats, turned and salted, and then replaced in the press, and there remains till morning, when it is salted, and also again the following evening. The second morning the [illegible] but the cheeses are left in the vats seven or eight days, being turned night and morning. After that, they are put on the floor of the cheese-loft, (which is a large room on purpose for keeping cheese,) and turned every day for three weeks or a month. In two months the cheeses are scraped and painted. The paint is a red powder, which is strewed over the cheese and rubbed on them with the hand. In three months they are what is technically called "roundy," and are fit for the cheese-factor.

The whey that drained from the curd, during the process of cheesemaking, is put into trendles (a sort of tub, and suffered to remain till the next day, when it is skimmed. From this whey butter is made, and the residue is given to pigs. The rennet is made by mixing salt and water till it will [illegible] egg, and then boiling it half an hour. When it is [illegible] calves' stomachs are put to a gallon of the brine, with [illegible] leaves and slices of lemon. In six weeks it is fit for use.

For single Gloucester cheese, the vats, which are made of elm, are thirteen inches in diameter, and about two [illegible] half in depth: for double Gloucester cheese, the [illegible] and twice, or more than twice the depth. All the [illegible] utensils, after being used are washed with bright water [illegible] scalded. In making the double Gloucester cheese, [illegible] that are called "truckles," the same method is pursued, [illegible]cept that more care is used in pressing the curd into the [illegible] which, for such cheeses, have three perforations to [illegible] whey drain off; and bandages of cheese-cloth are put [illegible] when the curd is above the vat. Sage-cheese is made [illegible] pounding sage and straining the juice into a pail of milk, [illegible] which rennet is then added. The same process is [illegible] for other cheese till the time when the warm whey should [illegible] poured upon it, when it is broken up with as much of [illegible] simple curd as the milkmaid considers necessary, and [illegible] as other cheese. To make the richest cream-cheese [illegible] thickest cream must be taken, and put, with a little salt, [illegible] a straining-cloth, which is hung up twelve hours [illegible] the whey may drop from it. When it is taken from the [illegible] it is put between two pewter-plates, with a weight on [illegible] upper one, and turned daily during five or six days. [illegible] cheeses can only be made in this manner in warm [illegible] The milk that the cows give when they are first turned [illegible] the fields in the spring, and when they are afterwards [illegible]tured in fields that have been newly mown, [illegible] much curd again as at any other period; and it is [illegible] richer. The principal season for making the thin cheese [illegible] from April to November: and that for making the [illegible] June, and the beginning of July. In different dairies [illegible] produce of cows differs very much; but in the Vale of [illegible]cester, from 3½ cwt. to 4½ cwt. per cow is considered a [illegible] annual average return. The same cow, on different [illegible] will yield milk of very different qualities, from one will [illegible] made rank and unpleasant cheese, while the other will [illegible] and rich.

but the markets of Bisley, Blakeney, and Leonard Stanley are disused.

Previous to the passing of the Reform bill the county returned ten members to parliament, namely, two each for the cities of Gloucester and Bristol, two each for Cirencester and Tewkesbury, and two for the shire, which latter, by the provisions of the new act, now returns four; and the elective franchise having been conferred upon Cheltenham, with the privilege of electing one burgess, and upon Stroud, which sends two, the number of representatives is thereby increased from ten to fifteen. The county is divided into two representative districts, called the eastern division and the western division: the return of members for the former is made from Gloucester, and for the latter from Dursley.

The canals that pass through Gloucestershire are distinguished by the names of the Thames and Severn, the Stroudwater, the Berkeley, and the Hereford and Gloucester. The Stroudwater begins at the town of Stroud, and entering the Severn at Framilode. Its width is 42 feet, its length nearly 8 miles, and its rise above the Severn 102 feet. It was constructed in 1775. The Thames and Severn canal begins at Walbridge, where the Stroud navigation ends, and joins the Thames at Lechlade. Its general breadth is 40 feet, its length 28 miles, and its fall to the Thames 130 feet. It is carried through Sapperton-hill by a tunnel two miles and three furlongs in length, and was opened in 1789. The Hereford and Gloucester canal begins at Hertford, and joins the Severn opposite Gloucester. Its length is thirty-five miles. The Berkeley canal, intended to open a safer and shorter passage for vessels of large burden between Gloucester and the wider part of the Severn, was begun in 1794 and finished in 1827, at an expense of half a *million* of money. It extends about eighteen miles in length, is from seventy to ninety feet wide, and eighteen feet deep. It runs on a dead level the whole way.

The railways are the Bristol and Exeter, which may be considered a continuation of the Great Western railway, commences at the former city, and taking the route of Bridgwater, runs near the towns of Taunton and Wellington, through Cullompton to Exeter. The western union proceeds from Gloucester, and, passing a short distance to the west of Worcester, joins the Great Western railway near Swindon, in Wiltshire. The projected Bristol and Gloucester will form a communication between the two cities; and above the town of Stroud will join the western union. The Birmingham and Gloucester railway, in its route from Gloucester, skirts Cheltenham, and runs a little to the east of Tewkesbury; then, leaving Worcester about four miles to the left or west, passes near Droitwich and Bromsgrove to Birmingham—from whence proceeds the Grand Junction to Manchester and Liverpool, and the Birmingham and London to the metropolis.

Gloucestershire contains a large population. In 1831 it amounted to 386,904, being 185,063 males, and 201,841 females.

GLYCERINE; the sweet principle of oils. When oil is converted into soap by the action of an alkali, the glycerine is separated, and dissolved in the water on which the soap floats. It has lately been shown by Chevreul, Liebeg, and Pelouze, that all saponifiable oils and fats are compounds of fatty acids with glycerine. In saponification, the former combine with the alkali while the latter is set free. It forms, when pure, a syrup, which does not crystallize.

GODWIN-SANDS; a range of sandbanks in the sea, extending about three leagues along the coast of Kent, in the neighbourhood of Deal. They were formed by an eruption of the sea in the year 1100, which swallowed the lands of Earl Godwin, extending to upwards of four thousand acres. They are extremely dangerous, especially to vessels riding in the downs, which are often driven upon them by violent winds, though by breaking the waves that would otherwise roll in upon the shore with immense impetuosity they contribute greatly to the safety of that famous roadstead. They are divided by a very narrow channel into two parts, and are in many places dry at low water. Their position, however, is often shifted by the force of the tides aided by violent storms. Floating lights are placed off them, and in hazy weather a bell is kept constantly ringing to warn the approaching mariner of his danger.

GODWIN, William, a celebrated novelist and political writer, was born at Wisbeach, in Cambridgeshire, the 3d of March, 1756. His father was a clergyman. In 1760 the father removed with his family to a village about sixteen miles north of Norwich, where he presided over a congregation. In 1767 William was placed with a private tutor at Norwich, for the purposes of classical education, and in 1773 he entered a college for dissenters at Hoxton, for the purpose of being educated for the church. Dr Kippis and Dr Rees were two of the principal professors at this college; and the tenets in vogue there inclined to Unitarianism. Mr Godwin had been bred a Calvinist, and was the farthest in the world from that temper of mind which is blown about by every new wind of opinion. Opposition made him more tenaciously cling to his own turn of thinking, and adhere to the persuasion in which he had been brought up. In the year 1778 he became minister to a congregation not far from the metropolis. He continued in the exercise of the duties of a clergyman for five years; after which he gave it up, in the year 1783, and came to reside in London; where he became soon distinguished as an author among his contemporaries, and frequented the society of many of the political leaders of the day, among whom Fox and Sheridan held the first rank. The French revolution, which broke out in 1789, when he was already engaged in his career as an author, turned his attention still more definitely to political subjects. The result of his meditations and his labours was "Political Justice," published early in the year 1793. At once the book and its author rose to a place of eminence in the public eye. Early in the following year he published "Caleb Williams" a novel which, in despite of the brilliant works of the same species which have since adorned our literature, still holds its place. In 1797 he published "The Enquirer," a work consisting of essays, developing, under various aspects, the tenets of his greater work. In the beginning of the same year he married the celebrated Mary Wollstonecraft, (see *Godwin, Mary*, in body of work,) but was not allowed long to enjoy the happiness he reaped from this union. She died the 10th of September 1797, having given birth to a daughter, the present Mrs Shelley.

The next work of Mr Godwin was the romance of "St Leon," published in 1799. The domestic happiness he had enjoyed, colours and adorns the scenes of this book. In 1800 he visited Ireland. He resided while there principally with Curran, and associated intimately with Grattan, and all the other illustrious Irish patriots. In 1801 he again married a widow lady of considerable personal attractions and accomplishments. The sole offspring of this marriage was a son, born in 1803. In the same year he published the "Life of Chaucer;" a work presenting a correct and animated picture of the times of the poet. This was followed in 1804 by a third novel, entitled "Fleetwood," characterised by elegance of style and force of passion, less striking perhaps than his former works of imagination, yet not less full of beauty and interest. In 1808, he published an "Essay on Sepulchres." In 1816 he visited Edinburgh, where he formed an acquaintance with Walter Scott and other celebrated Scottish writers; and here also he entered into a treaty with Mr Constable, the bookseller, for the composition of a new novel. "Mandeville," published in 1817, was the result. We here trace the mellowness of ripened years; the reading, the study, the careful polish of maturity, adorning, but not diminishing, the untamed energy and eloquence of his earlier works. In 1820 his work in opposition to the opinions of Malthus appeared. Fervently attached to all that is lofty, independent, and elevating in his speculations on human society, Godwin strenuously controverted the degrading, hard, and demoralizing tenets of the author of the Essay on Population. After this, he was occupied several years in writing "The History of the Commonwealth of England." The four volumes of which this work is composed were published in the years 1824, 1826, 1827, and 1828. In 1830 he published "Cloudesley," his last novel.

In addition to the above works Mr Godwin published, in 1784, a series of six sermons, called, "Sketches of History." Soon after, he was engaged as a principal conductor of the "New Annual Register," a situation from which he derived a small but certain income. The year after the death of his first wife, he published a life of her, under the title of "Memoirs of Mary Wollstonecraft." He also edited her posthumous works. In 1800, a tragedy of Mr Godwin's called "Antonio, or the Soldier's Return," was brought out at Drury Lane Theatre; but was performed only one night. In 1801 appeared "Thoughts on Dr Parr's Spital Sermon," being a reply to some attacks which had been made upon him by Dr Parr, Sir James Mackintosh, and others. After the publication of his "Fleetwood," (in 1804), Mr Godwin was for some time little to be seen or heard of in general society. He had, as it were, departed from the busy and the bustling scene of life. He was, however, still in London; and in one of its most populous parts, Skinner Street; had opened a bookseller's shop, where, under the assumed name of Edward Baldwin, he was peaceably ushering forth little works for the instruction and entertainment of young people: many of these were written by himself, under the name already mentioned, and bear the following titles: "Pantheon, or the History of the Gods of Greece and Rome;" "A History of England;" "Outlines of English History, for very young Children;" "History of Rome;" "History of Greece;" "Outlines of English Grammar; and Fables, Ancient and Modern;" &c. These little books are still on sale, and some of them have passed through several editions. In this employment Mr Godwin lived for many years, unknown but to his friends, in straitened circumstances, yet too proud to own it. In 1807 he made another unfortunate dramatic attempt in producing "Faulkner," a tragedy at Drury Lane Theatre. In 1815 appeared "The Lives of Edward and John Philips," Milton's nephews and pupils. This work is written in a pleasing style, and is a valuable acquisition to literary history. Mr Godwin also communicated some letters to the Morning Chronicle newspaper, under the signature Edax, "on the assumed grounds of the War," which were collected and republished in the same year. His last work, "The Necromancers," appeared in 1834. From an interesting and valuable catalogue of Mr Upcott's MS. treasures, it appears, that he received for his great work on "Political Justice," £700; for "Caleb Williams," £84; and for "St Leon," 400 guineas. This is a curious illustration to his history, showing the comparative consequence of Godwin's name at different periods of his life.

In person, Mr Godwin was rather under the middle stature, and compactly built; his countenance was of a particularly mild and pleasing cast, and when not excited, few would believe him to be the violent politician and astounding novelist who could make thousands tremble at his name. He always enjoyed good health, which may be considered a reason that the power and freshness of his mind were preserved so fully and so clearly to the last; he could not have been happy had he laid aside his pen, nor would he willingly have deprived his fellow-creatures of what he himself considered to be the advantages arising from his labours. His last few years were rendered comfortable to him by an appointment, which he received during the administration of Earl Grey, to the sinecure office of Yeoman Usher of the Exchequer. He resided latterly in the residence attached to this office, adjoining the speaker's gateway in New Palace Yard, and which was pulled down in 1835. The death of Mr Goodwin took place on the 7th of April 1836.

Mr Godwin's son, William, died Sept. 8, 1832, of cholera, after a very short illness, in the 29th year of his age. He had been connected for some years with the press, and was one of the parliamentary reporters of the Morning Chronicle. He possessed, as a writer, much of the literary power of his family. His Essays, in the periodicals to which he contributed, were marked by more than ordinary liveliness and good tact, and showed at the same time an extent of observation much beyond what could have been expected from his years and experience.

GOLD-FISH, (*s.*) or GOLD-CARP, (*Cyprinus Auratus*,) were first introduced into this country from China, about the year 1691, but were not generally known till 1728, when a great number were presented to Sir Matthew Dekker, and have gradually been distributed to most parts of the country. They breed in ponds and small portions of water, but are not to be found in any of our rivers. A flow of water, even through a pond, is almost sure of destroying them, the water, by such a change, proving too cold for them; but in stagnant water, and even in fetid ditches, they appear to do well. Their spawning time in England varies according to the season, being seldom earlier than May, or later than July, and, under very favourable circumstances, they will spawn even [illegible] once in the year. The approach of this season is known, as with other fish, by their following each other with very quickened motion, so much so, that they will sometimes jump out of the water, or thrust themselves into weeds so near the bank as to allow themselves to be taken by the hand. The milters, or male fish, are not distinguishable from the spawners, or females, by any difference of colour, as many have supposed, but are known by the dorsal fin, which in the male fish is short, and ends abruptly; but in the female it is long, extending almost to the tail, and is of a fan-like shape. The actual time of spawning may be perceived by an unusual stillness in the fish, and by their keeping in deep water, even in the hottest weather, contrary to their usual practice, which is, to remain basking in the sun at the very surface, and with their backs frequently out of the water. The increase of these fish, when first put into a pond, will be very considerable, but after a time, unless the young fry are removed, there is little or no increase; this arises, no doubt, from their eating the spawn before it has life. In the Chinese rivers the spawn is carefully collected, and exposed for sale, and a great number of barks may be seen on the great river Yangtse-kiang, which go thither to purchase it. When the spawn becomes alive, the fish are of a very dark colour, many of them nearly black, and others of a dark slate colour. The former of these produce the red or gold-fish, and the latter the white or silver fish. The time at which this change takes place is very various. In some it happens at the end of the first year, but in others not till the second or third year, or even perhaps later. Our observations do not enable us to give any general rule on this subject. Although these fish are extremely tender, yet they are seldom affected by our coldest winters, and seem in the spring to have been not at all altered by the winter months. The heat, however, of the hand, s sufficient to deprive them of life, and is probably ne reason why they seldom live long when con- ned in glasses. Persons who are desirous of keep- g them should change the water very frequently, nd remove the fish by a small landing-net. It is lso of advantage to keep them during the night a pail or tub of water, and remove them into e more confined place in the morning. The best me of the year to take them from the pond is ring the month of April, or before they become avy with spawn; for in a state of confinement ey seldom or never survive the spawning season. hey never spawn in a transparent vessel. The lours also of these elegant and beautiful fish vary nsiderably at different seasons; but we have al- ys noticed that the colours are the most brilliant out the time of spawn. When kept in ponds y may be made very familiar. By occasionally ding them with bread they become tame, and l generally begin to congregate on hearing the nd of the human voice. It is not at all unusual them to be brought together at the sound of a istle, or other shrill noise. But if any attempt is le to catch them, either by hook or net, they me extremely shy, and it is not until after nsiderable time that they again become fami-

OODWIN, FRANCIS, an English architect of e eminence, who died in London, Aug. 30, 1835. public works of this gentleman were new ches at Hulme, by Manchester; Ashton under e Portsea, Hants; Derby; Kidderminster; Oldham; Bordesley, by Birmingham; West Bromwich; Bilston; Walsall; and Burton upon Trent. He rebuilt churches at Bilston and Walsall; St Michael's, Southampton; the tower of St Peter's, Manchester; and the tower and spire of St Paul's, Birmingham. He also erected town halls at Manchester and Macclesfield, markets at Leeds and Salford, an exchange at Bradford, and a county prison at Derby. A description of the Manchester town hall, which may be termed his chef-d'-œuvre, is given in the Introduction to his second volume of "Rural Architecture," with an interior view and plan. His principal private work was Lissadell, the mansion of Sir R. G. Booth, bart., in Co., Sligo, an interior of the gallery in which forms the frontispiece to his first volume of "Rural Architecture." He was also employed by lord Hatherton, in Staffordshire; by E. J. Cooper, Esq. M. P. at Markree, Co., Sligo, &c. When public buildings were offered to competition, Mr Goodwin frequently furnished plans, and in several instances he obtained premiums. This was the case with regard to the new grammar school of Birmingham, his design for which was exhibited in 1834 at Somerset house. A few years ago he brought before the public a scheme for an extensive cemetry in the vicinity of the metropolis, the drawings of which were exhibited at an office taken expressly for the purpose in Parliament Street. The grounds were to have been ornamented with a variety of edifices, copied from the principal buildings at Athens, of some of which there would have been duplicates in the corresponding parts of the inclosure. This project excited some attention at first, but soon died away; and, in fact, it was upon such a scale that it could hardly have been realised. During a great part of 1834, Mr Goodwin was in Ireland, preparing designs for extensive additions to the college at Belfast, including a magnificent building for a museum, the plan of which was ingenious and novel; and he was also engaged in planning some baths at Dublin: but both these undertakings seem to have been abandoned. The proposals put forth for designs for the new houses of parliament engrossed his attention more deeply than any previous object, as he felt anxious to avail himself of the advantage which his previous attention to the same subject, two years before, had already afforded him. At the inquest which was held on his death, Dr Copeland said that the deceased had for some months past been engaged in forming plans for the erection of the houses of parliament; and so intense had been his studies upon the occasion, that he declared to him (the doctor) that he was unable to obtain any rest at nights, so completely engrossed were his thoughts upon the plans he was engaged in drawing out. In answer to a question from the coroner, the doctor said that such intense study was likely to produce a determination of blood to the brain, and occasion an attack of apoplexy. The jury returned a verdict of "died by the visitation of God, in a fit of apoplexy." Mr Goodwin was the author of a work entitled "Rural Architecture: a series of Designs for Rustic. Peasants', and Ornamental Cottages, Lodges, and Villas, in various styles," in two volumes, quarto, each of which has a supplement, entitled "Cottage Architecture." He also published, in 1833, his "Plans of a new House of Commons."

GOOSEBERRY, (*a*.) The gooseberry is only to be found in temperate climates, being unknown between the tropics of either hemisphere. It may be considered to be one of the native fruits of this island, and it is known to have been an object of cultivation so far back as the reign of Henry VIII. Only about a dozen varieties were then known; now several hundreds can be enumerated.

The gooseberry in the southern parts of England is not comparable to that of the north; and the flavour of the Scotch berry is much superior to that of those produced in any part of England; while, in Scotland itself, the gooseberries of Dundee, Aberdeen, and Inverness, much exceed in flavour any which the Edinburgh market-gardeners can raise. In size and appearance, however, the gooseberries of Lancashire are, perhaps, unequalled by any in the world; and there, and in the counties of Cheshire, Staffordshire, and Warwickshire, the striking improvement which has taken place in the cultivation of this cheap and agreeable fruit is to be attributed less to the market-gardeners, or even to the scientific horticulturists, than to the mechanics, who very generally spend much of their leisure time in the pleasing occupation of gardening, particularly in the cultivation of the gooseberry, and have their ambition very much turned towards the production of large specimens of that fruit. Some idea of the attention which has been paid to this object may be formed from the fact, that of the two hundred kinds of gooseberries which are enumerated in the fruit catalogue of the horticultural society, not fewer than a hundred and fifty are the large Lancashire gooseberries. "Gooseberry shows," as they are called, are periodically held in different parts of Yorkshire, Lancashire, and Cheshire, at which berries are exhibited in competition for prizes. This operates as a stimulus to the cultivation of the fruit.

About forty years since it was thought a great thing when an amateur grower pulled a gooseberry that was heavier than a "spade-ace guinea," or, in the parlance of the workshop, "weighed more than a pound." Berries were, however, soon after produced that weighed twice as much; and little would now be thought of a show fruit that should not weigh five "pounds," or sovereigns. The largest gooseberry ever grown was a handsome yellow fruit called "Teazer," which was shown at Stockport in July, 1830, and weighed 32 dwts. 13 grs. The heaviest red berry on record was the "Roaring Lion," exhibited at Nantwich in 1825, and weighing 31 dwts. 16 grs. The heaviest white was the "Ostrich,"—24 dwts. 20 grs.—shown at Ormskirk in 1832, in which year the maximum of reds was only 27 dwts. 13 grs. In the same season, a seedling green was exhibited at Nantwich of the uncommon weight of 30 dwts. 18 grs. To this statement of the weight to which the fruit has sometimes been brought, it may be interesting to add that a seedling plant of reputation has been known to produce, when sold in lots, upwards of £32. This was a rare case, indeed; but it is said to be not at all unusual for twenty guineas to be brought in by the distribution of a single bush in rooted parcels.

GRANT, Sir William, The Right Hon., formerly master of the rolls, was descended from the Grants of Beldornie, one of the branches of that great and ancient clan of Grants which has been so long distinguished in the history of Scotland. His father, who was originally bred to agricultural pursuits, died collector of customs in the isle of Man. He was himself born in the year 1754, at Elchies, on the banks of the Spey, in the county of Moray; and was placed with his younger brother (who became collector at Martinico) at the grammar school of Elgin. He completed his education at the old college of Aberdeen; and then repaired to London, to pursue the study of the law. He was entered at Lincoln's inn; and at the age of twenty-five, he was considered competent to fill the situation of attorney-general of Canada, to which he was accordingly appointed. He immediately left this country for that colony, not having been then called to the bar. He soon obtained undisputed pre-eminence at the Canadian bar; all his talents were called into active service, and he showed that, if occasion wanted, he could engage in other duties than those of his profession. Canada was at that time traversed in every direction by the rebellious armies of America, and Mr Grant was present at the memorable conclusion of their attempt—the siege of Quebec, and the death of Montgomery. Mr Grant himself engaged in active military duty, and commanded a body of volunteers. He remained in Canada for a considerable period, enjoying all the success which could there be obtained; but the state of the colony could not have been very inviting. Probably the disturbance which his favourite pursuits met, and the opinion that he had abilities greater than were necessary for pre-eminence at a colonial bar, induced him to resign his office of attorney-general, and to try his fortune in England. Certain it is, that he returned to this country, and was called to the bar by the society of Lincoln's inn, in the year 1787. Mr Grant took his stand in the common law courts, and joined the home circuit. The usual fate, however, here awaited him. Nearly unknown in this country, entirely without the necessary connection to insure an early introduction to business, and being naturally of rather a shy and retired turn, he went the circuit for several years without obtaining a single brief. How long he might have remained thus unemployed, it is in vain to conjecture. But, happening to be retained in some appeals from the court of session in Scotland to the House of Lords, lord chancellor Thurlow was much struck with his powers of argument, and having learned his name, observed to a friend, "Be not surprised if that young man should one day occupy this seat." That this prophetic opinion was not fulfilled to the letter, has been generally attributed to Sir William Grant's refusal to undertake the duties attached to that high office. In consequence, however, of an invitation from lord Thurlow, he subsequently left the common law bar, and thenceforward practised only in equity. At the general election in 1790, Mr Grant was returned for Shaftesbury, and soon distinguished himself as a powerful coadjutor of Mr Pitt. He spoke seldom, and never but on questions with which he was fully acquainted; but his talents and information were soon so generally recognised as to render his assistance essentially valuable. He was called within the bar, with a patent of precedence, in 1793; and in the same year was appointed a Welsh Judge, when a new writ was ordered for Shaftesbury on the 20th of June, and he was re-chosen. However, on a vacancy for Windsor, which occurred in the following January, he was elected for that borough: he was at that time solicitor-general to the Queen. In 1796 he was chosen knight in parliament for the county of Banff.

In 1798, he was appointed chief justice of Chester; in 1799, he succeeded the late lord Redesdale as solicitor-general, and was of course knighted; and on the 20th of May 1801, in consequence of the promotion of Sir Pepper Arden to be chief justice of the common pleas, he was nominated master of the rolls. During the whole of this period, he continued to render essential service to Mr Pitt and his administration in the House of Commons; remaining member for Banff until the dissolution of 1812. As a politician, however, no personality disgraced his attacks, no venom embittered his arguments. During a period of upwards of sixteen years he filled the judicial chair in the rolls court with undiminished credit. At length he became anxious to retire while still in the full possession of his faculties. This purpose he carried into effect in the latter end of 1817, from which period he appeared little in public life.

During his latter years he lived chiefly at Barton house, Dawlish, the residence of his sister, the widow of admiral Schanck; and at that place he died, on the 25th of May, 1832. He never married.

The late Mr Charles Butler, in his "Reminiscences," speaks of Sir William Grant in the following terms:—"The most perfect model of judicial eloquence which has come under the observation of the Reminiscent, is that of Sir William Grant. In hearing him, it was impossible not to think of the character given of Menelaus by Homer, or rather by Pope,—that

'*He spoke no more than just the thing he ought.*'

But Sir William *did* much more:—in decompounding and analysing an immense mass of confused and contradictory matter, and forming clear and unquestionable results, the sight of his mind was infinite. His exposition of facts, and of the consequences deducible from them, his discussion of former decisions, and showing their legitimate weight and authority, and their real bearings upon the point in question, were above praise; but the whole was done with such admirable ease and simplicity, that while real judges felt its supreme excellence, the herd of learners believed that they should have done the same. Never was the merit of Dr Johnson's definition of a perfect style,—'proper words and proper places,'—more sensibly felt than it was by those who listened to Sir William Grant. The charm of it was indescribable; its effect on the hearers was that which Milton describes, when he paints Adam listening to the angel after the angel had ceased to speak; often and often has the Reminiscent beheld the bar listening, at the close of a judgment given by Sir William, with the same feeling of admiration at what they had heard, and the same regret that it was heard no more."

GRANT, Mrs, of Laggan, was born at Glasgow in the year 1755. Her father, Mr M'Vicar, was an officer in the British army, and on her mother's side she was descended from the ancient family of Stewart of Invernahyle, in Argyllshire. Shortly after her birth, her father accompanied his regiment to America, under the auspices of the earl Eglinton, with the intention of settling there, he should find sufficient inducement for doing. His wife and infant daughter soon after joined him. They landed at Charleston, and though the child was then scarcely three years of age, she retained ever after a distinct recollection of her arrival in America. During her residence in that country, she was taught by her mother to read, and she never had any other instructor. But she was so apt and diligent a scholar, that before her sixth year she had perused the Old Testament, with the contents of which she was well acquainted. About the same age she also learned to speak the Dutch language, in consequence of being domesticated, for some time, with a family of Dutch colonists in the state of New York. Soon after, the sergeant of a Scottish regiment gave her the only lessons in penmanship she ever received; and observing her love of reading, he presented her with a copy of Blind Harry's "Wallace," which, by his assistance, she was enabled to decypher so fully as not only to understand the dialect in which the book was written, but also to admire the heroism of Wallace and his compatriots, and to glow with that enthusiasm for Scotland, which, as she herself expressed, ever after remained with her, as a principle of life. Her fondness for reading was universally observed, and fortunately procured for her, from an officer of her father's regiment, a copy of Milton's Paradise Lost, which, young as she was, she studied with much care, and which she afterwards found to be an inestimable treasure. To the diligent study of this book, Mrs Grant herself ascribed the formation of her character and taste, observing that whatever she had of elevation of spirit, expansion of mind, or taste for the sublime and beautiful, she owed it all to her familiarity with Milton. The effect of this became so evident in her conversation and habits, as soon to secure for her the notice of several of the most eminent settlers in the state of New York, and in particular to procure for her the friendship of the celebrated Madame Schuyler, whose worth and virtues Mrs Grant has extolled in her "Memoirs of an American Lady." Mrs Grant's father had, with the view of permanently settling in America, received a large grant of land, to which, by purchase, he made several valuable additions; but falling into bad health, he was advised to leave America, which he did very hurriedly, and without having got his property disposed of. He returned with his wife and daughter to Scotland about the year 1768, and a few years afterwards he was appointed Barrack-Master of Fort-Augustus. Soon after this the Revolutionary war broke out in America, and before his landed property there could be disposed of, it was confiscated, and thus the chief means to which the family had to look for their support were cut off. While her father was Barrack-Master at Fort-Augustus, the office of chaplain to the Fort was filled by the Rev. James Grant, a young clergyman of accomplished mind and manners, and connected with some of the most respectable families in the neighbourhood. Mr Grant was soon afterwards appointed minister of the parish of Laggan, in Invernesshire, and in the year 1779 he was united in marriage to the subject of this notice. Of this marriage twelve children were born, four of whom died in comparatively early years, and soon afterwards Mr Grant himself was cut off, in 1801, leaving his widow with a family of eight surviving children.

Mrs Grant had always found delight in the pursuits of literature, and having early shown a taste for poetry, she was occasionally accustomed, for the entertainment of her friends, to write verses; and she also, by way of relaxation, carried on an extensive correspondence with some of the friends of her youth. Of her poems, which were generally written with much haste, and on the spur of the moment, her friends formed a much higher opinion than she herself ever did. She generally gave them away, when they were finished, without retaining any copy. It occurred to some of those friends that a volume of her poems might be published with advantage; and, before she was well aware of their kind intentions, proposals were dispersed all over Scotland for publishing such a volume by subscription. At this time, Mrs Grant had not even collected the materials for the proposed publication; but in a short period, the extraordinary number of upwards of 3000 subscribers had been procured by her influential friends. The late celebrated duchess of Gordon took a lively interest in this publication; and Mrs Grant was, in this way, almost forced before the public. The poems were well received on their appearance in 1803. From the profits of this publication, Mrs Grant was enabled to discharge all the debts which had hitherto pressed upon her, and which had been contracted during her married life. Three years after this, she published her well-known "Letters from the Mountains." They went through several editions, and soon raised Mrs Grant into much deserved popularity, and procured for her the patronage and friendship of many influential individuals, and particularly of the late bishop Porteous, Sir Walter Farquhar, Sir William Grant, and many other eminent persons.

In the year 1810, Mrs Grant removed from Stirling to Edinburgh, where she resided during the remainder of her life. Here it was her misfortune to lose successively all her remaining children, with the exception of her youngest son. The only other works of any magnitude which Mrs Grant prepared for the press, were her "Memoirs of an American Lady," already referred to, and her "Essays on the Superstitions of the Highlanders of Scotland," both of which were favourably received. The former work has been greatly esteemed both in this country and in America, and contains much vigorous and powerful writing, with sketches of Transatlantic scenery and habits, during a primitive period, which were characterised as "a picture of colonial manners, just in their happiest age, given with a truth and feeling that cannot be too highly estimated."

In 1825, Mrs Grant received a pension of £100 yearly on the civil establishment of Scotland, which, with the emoluments of her literary works, and some liberal bequests by deceased friends which subsequently arose, rendered her latter years quite easy and independent. Her conversational powers were, perhaps, still more attractive than her writings. Her information on every subject, combined with her uniform cheerfulness and equanimity, made her society very delightful. There was a dignity and sedateness, united with considerable sprightliness and vivacity, in her conversation, which rendered it highly interesting; and withal, it was so unaffected and natural, and seemed to emanate from her well-stored mind with so little effort, that some of her most profound and judicious remarks, as well as her liveliest sallies, appeared as if they had been struck off at the moment, without any previous reflection. The native simplicity of her mind, and an entire freedom from attempts at display, soon made the youngest person, with whom she conversed, feel in the presence of a friend; and if there was any quality of her well-balanced mind which stood out more prominently than another, it was that benevolence which made her invariably study the comfort of every person who came in contact with her. She died on the 7th Nov. [illegible], aged eighty-four.

GREECE, (*a*.) In January [illegible], the allied powers elected Otho, the second son of the king of Bavaria, then a minor, king of Greece (the crown having been previously refused by prince Leopold of Saxe-Coburg), and in February, he arrived in Greece, accompanied by a council of regency, and was acknowledged by the Greeks as their sovereign. In June, 1835, Otho, being of age, took the direction of the affairs of state, and in Nov. 1836, he married a daughter of the grand-duke of Oldenburg. It is settled, that the children by his marriage with the princess of Oldenburg shall be educated in the Greek church. The government is a constitutional hereditary monarchy, with two legislative houses, a senate and a house of representatives.

Division.	Pop.	Towns.
Northern Greece, or Livadia,	[illegible]	Athens, [illegible]
Peloponnesus, or Morea,	[illegible]	Nauplia, Patras
The Islands, or Cyclades,	176,000	Hydra, Syra
Total,	[illegible]	

The population is not correctly ascertained, and some reckon it less than 700,000. A university has been founded at Athens, the capital. Popular education is still in its infancy, though considerable has been done to favour it. In [illegible], there were only four newspapers; and in [illegible], the number had increased to twelve.

The principal commercial ports are [illegible], Mesolonghi, Patras, Galaxidi, and the islands of Syra, Hydra, and Spezia. The number of Greek merchant vessels, in 1832, exceeded [illegible], exclusive of small craft or coasting boats.

The comparatively slight interest which in recent years the affairs of Greece have excited in the civilized world, after having for nearly a lustrum absorbed the sympathy of the best portion of the public, can hardly surprise us. It is natural in man, that only the moment of effort and action awakens the highest interest; he who has reached his object, has lost our sympathy. The enthusiasm with which the victor in a race is hailed, though ever so loud and boisterous, is only a [illegible] warm feeling, compared with the intense and breathless anxiety with which we follow his course, and anticipate its undecided result. The ship we see from the shore, struggling with the [illegible], calls forth all our sympathy; while our eyes glance indifferently over the mass of vessels in the crowded port, although the crippled condition of more than one of them may tell us the story of similar, and perhaps heavier struggles.

The picture, which Greece at present affords to the beholder, is indeed not dissimilar to our ship. The wounds are still bleeding, which, at the moment we saw them inflicted, made our hearts tremble. The whole body of the [illegible] warrior, who not only has to cure these honourable wounds, but who has, and we fear long will have to suffer from the after-pains of a long and ignominious imprisonment, is still far from being healed; yet our attention has been turned to other objects, as soon as we thought the patient was on the way of recovery. Greece as it is, cannot excite our interest solely either in respect to [illegible] it has been, or what it hereafter will be. In its present state we strive in vain to find one satisfactory feature. Both in a moral and in an intellectual point of view, we still see the whole nation, partly in that state of vicious corruption, the unavoidable result of its long degradation; partly in that first stage of infancy, from which only time can release it. Time also only can inform us what results will follow from all that is new in that country. Legislation, administration, institutions for education,—every thing is *new* in *the whole* extent of the word; that is, not grown up out of the former condition of the country, but founded on principles foreign and incomprehensible to the mass of the nation, and carried over to it from other communities.

The only subject, which, in this great revolution of all things, has not itself experienced any revolution, is the literature of the modern Greeks. Nay, so far is this literature from having received any important influence from the shock which moved and turned all other affairs, that it is partly its very progress and influence to which this shock is ascribed. Be this as it may, the literature of modern Greece, although itself very modern as compared with that of most other European nations, yet appears in the present state of that country, with the exception of her religion, as the oldest of her institutions. And should it not excite our interest at least in this, if not in any other respect?

The origin of the Romaic or modern Greek tongue, as a *literary* language, the Greek literary historian, Rizo Néroulos, dates from the beginning of the last century. Until that time, the learned wrote without exception in the ancient Greek language, which, however corrupted and estranged from its classic purity, was at least very different from the vernacular tongue of the country. The same writer divides the history of modern Greek literature into three periods; namely, from 1700 to 1750; from 1750 to 1800; and from 1800 to 1821, or the beginning of the revolution. A more extended view of the different character of these periods than what is given in the body of the work, may be acceptable.

The first period must indeed be regarded merely as an introductory one. Most of the gifted men continued to write in the ancient language. Alexander Maurocordato was an exception, and his example exerted gradually a considerable influence on others, and the more, as he was one of the first Greeks who acquired any political weight among the Turks. He wrote a Grammar, a system of rhetoric, and several other useful books. But he rendered a far greater service to his nation, by obtaining permission from the government to establish schools in the different towns of Greece. The son of the same individual was the first Greek Hospodar of Wallachia. Before him, no member of this subjugated nation had ever been raised to a similar dignity.

The second period carried the higher classes of the Greek nation (not the common people) forward with giant steps in their progress. By far the greater portion of the productions of this period consisted indeed only of translations, especially from the French. But mental cultivation began to be of value in the eyes of the nation; by prince Mourouzi's influence on Selim III., the schools were multiplied and enlarged; and even various colleges were founded for the higher branches of learning. Towards the end of this period, many young Greeks began to visit foreign and especially German universities; and the result of it was, that even the philosophy of Kant was lectured upon in Janina. There were among the better classes not a few signs of high intellectual improvement. At the beginning of this period, the names of Samuel, the learned patriarch of Constantinople, of prince Caradza, of Theodoki, of Bulgaris, were mentioned with esteem; towards the end, those of Philippides, Psalidas, Benjamin, and others, were well known. The most celebrated name of this period, however, is that of the unfortunate and patriotic Rhiga. A Thessalian by birth, he had already made himself known among the more learned of his countrymen as the author of a work on natural philosophy, of a map of Greece, &c., before his patriotic songs made him the favourite of the whole nation.

The few years of the third period, which Rizo closes with the year 1821, (for what influence the revolution and the regeneration of Greece will have on her literature only coming years can tell,) did more for the mental developement of the Greek nation, and diffused more light among the people, than the whole previous century of a slowly dawning morn. Commerce was never so flourishing. Travelling in foreign countries became more and more frequent; and the number of Greek students in foreign universities increased. In comparing themselves with others, the Greeks became more powerfully affected with the feeling of their own degradation. They turned their attention more closely to the relics of their ancient glory, the writings of their classic forefathers. Their present language began to be the object of their care; and a noble national feeling became universal, that all mental acquirements, and the revival of science, in order to be lasting, could only be safely founded on their country's deliverance. The most distinguished name of this period is that of the well known Corais; a man equally esteemed as a scholar and a patriot, and who, as a writer, has exercised more influence than any other of his countrymen. His influence on the language is at present generally acknowledged. After many struggles with the champions of the modern language in all its corruptions, and with their adversaries, the indiscriminate advocates of the classic system, the middle way, adopted by Corais, seems to be universally chosen, namely, to enrich the language of the present generation from the treasures of the ancients, but without disturbing its basis; and to dismiss, as far as possible, the host of Germanisms and Gallicisms, introduced by the prevalence of translations. Among the writers of this period, the balance of talent seems to incline decidedly to history and its kindred topics. Many historical works were translated from foreign languages, and some original works of the same kind were written by J. Paliuris, Rizo Néroulos, Mustoxidi, Athanasius Ypsilanti, and others. A history of Souli and Parga, by Perevos, was highly prized by Niebuhr. As a poet, in the manner of the graceful Teian bard, Christopulo is highly esteemed; Solomo of Zante, Kalbo, Sakellarios, and others, are also well known disciples of the muses. But with the exception of history and poetry, Greece has hardly produced one original work of any importance. And although it is said, that during the last fifty years more than three thousand works have been published in the

Romaic language, yet the whole modern Greek literature must still be considered as a literature of translations. A few names of original merit can here be of no avail; and, indeed, even most of these are only distinguished as imitators of foreign originality. Thus, then, we may say, without being accused of harshness or rashness, that the modern Greek literature, notwithstanding the greater number of years during which it has existed, is still in an infancy analogous to that of the other institutions of Greece.

There is only one point of view, only one branch of literature (if we may consider it as belonging to literature), in which the modern Greeks appear as perfectly original, and as deserving the highest interest of thinking foreigners. We allude to their *Popular Poetry.*[*]

In respect to locality, two general divisions may be made in the modern Greek songs, namely, the songs of the mountains, and the songs of the coasts and the islands. The first, not always indeed composed by mountaineers, but even when made in the cities, for instance in Janina, calculated to please the inhabitants of the mountains,—are for the most part historical, and indeed mostly devoted to the achievements of the *klephts* or robbers; but ideal subjects also are not foreign to the mountain bards, and we find that some of the most beautiful and original among the romantic ballads had their origin in the mountains. In their form the mountain songs are mostly rougher, and composed with less skill, than those of the coasts and the islands.

The poetry produced on the Greek coasts, and on the islands, is frequently, but not always, in rhyme. The ballads are comparatively poor in historical interest. Most of their subjects are fictitious, and lyric songs are more frequent. Quite peculiar to these regions are the Katsakias, viz. a species of short songs in distichs, which remind us in some measure of the Spanish *seguidillas;* although they have no reference to dancing. Like them they are rather epigrammatic sallies, than expressions of feelings; jests and sighs of a sort of love, of which the imagination knows more than the heart. They are mostly extemporized.

In respect to character, the Romaic songs are subject to a threefold division. They are either *domestic*, or *historical*, or *fictitious*. Under domestic songs we include those which are composed for certain occasions, and are chaunted at weddings, on certain holidays, solemn partings, and the like. In reference to this species of songs, it will be found, that they are in general of more interest in respect to morals and manners, than to poetry. The Greek wedding-songs, like the Slavic, have moreover too close a connection with the ceremonies themselves, to be detached from them. The same is the case with the festival songs, devoted to St Basil's or New-year's day, and the first of March as the beginning of spring. All Greece resounds on this day with "The lay of the Swallow," a delicate and *naïve* song, lovely like the first breathing of approaching spring.

There is a certain class of parting-songs, peculiar to Greece. Commerce and necessity induce the Greek to leave his beautiful country; but, notwithstanding the numerous privations to which he must submit at home, and the various ill-treatment to which he was exposed during the many centuries of Turkish oppression, it is seldom his free choice that calls him away. The popular language designates foreign countries by the term [illegible], the *desert*. The pain of parting is increased by the uncertainty of the fate of those he leaves. The friends and relations of the wanderer's family assemble, take their last meal together, and join in songs, either such as are before known, or others composed expressly for the occasion.

More interesting still are the Myriologia, the solemn lamentations, or funeral songs. It is remarkable, that the Slavic nations, who celebrate every important scene of life with song, are deficient in this sort of poetry. The myriologia are said to be the most poetical of all the Greek domestic songs. They are always composed by females, and are mostly the productions of a momentary inspiration, that is, they are improvisations. There are, of course, certain forms, phrases, and images, always employed in them. The Greek women are also in the habit of preparing themselves for this duty, by singing lamentations on imaginary deaths, often only occasioned by the death of a bird, or the withering of a flower; but the whole of the recitation must, of course, always be adapted to the occasion, and thus these preparations can only be incomplete. The myriology is not always pronounced by the chief mourner; often a neighbour, known to be practised and skilful, is called in, or comes of her own accord, to fulfil that solemn duty. The mere aspect of the house of mourning and of the corpse, puts her in a certain state of inspiration, which gradually rises almost to phrensy. Exhausted and half senseless, after having finished, she can scarcely remember what she has uttered; the hearers also are violently affected; and, amidst the general sobbing and groaning, it would be cruelty to sit down and write what would be so curious to read. Thus it seems natural, that hitherto only fragments of myriologies, remembered by some one of the audience, should have been written down.

Neither the historical nor the romantic ballads of the modern Greeks are of great antiquity. Of the Greeks, as of other nations, we must suppose that they always have had popular ballads. But their great vivacity, and perhaps their deficiency in that pious feeling so favourable to the preservation of the old,—that ancient trait, which causes all classes and ages to take the most lively interest in the *present*, in the newest affairs, and which now, as of old, is characteristic of the Greek nation,—together with the facility of making poems in their poetical language; all these circumstances have been the occasion, that the old ballads, from generation to generation, have been superseded by new ones. M. Fauriel has printed one, after a manuscript of the sixteenth century in the royal library of Paris; but this old piece, although by no means different in its genius from the modern, is of course no longer current. The oldest hero who appears in any of the present Klephtic ballads, is Christos Milionis, who lived towards the end of the seventeenth century. It is probable that at least the essential portion of the ballad is of the same age. Several others celebrate events at the beginning of the eighteenth century. By far the greater portion celebrate achievements of Klephts of our own time.

During the long period of the Turkish oppression, all those were called Klephts, or [illegible] who, in Epirus, Thessalia, and Macedonia, retired to the mountains, determined rather to brave the dangers of a wild and lawless life, than to obey the arbitrary pleasure of the Turkish Pachas and Beys. The government, despairing to conquer them, found it profitable to bring them under a sort of organization, uniting them with the *Armatoles*, a kind of militia in the service of the Porte, though consisting of Greeks, and instituted in very early times. The Klephts became now Armatoles, without changing much their way of life; and those only, who were entirely intractable, retired still deeper into the mountains, and founded the Klepht-villages, high on the mountains, and utterly inaccessible to military power. The names and trades of the Armatoles and Klephts were constantly confounded. To distinguish them, the organized military Greeks were sometimes called *tame* Klephts, the others *wild* Klephts. But even this difference gradually disappeared, in consequence of the increasing despotism of the Turks. Whenever a captain of the Armatoles had trouble with the Turkish magistracy, or heard that some Pasha or Dervendshibashi had something in view against him, he fled to the mountains, perfectly conscious that his band of Armatoles would soon follow him. In this way it might daily happen, that the police of a territory (for this the Armatoles strictly were) was changed into a band of robbers.

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[*] The merit of having made the literary world acquainted with the remarkable Romaic popular songs, to an extent to enable us to judge of their character, belongs to the learned Frenchman, Fauriel.

These Robbers are then the principal heroes of the Greek historical ballads. Although rough and vindictive, and leading a lawless life, every unprejudiced mind must feel that they are not to be looked upon in the same light as robbers in well-organized states. Their depredations were mostly, often exclusively, directed against the Turks; but even towards them they were seldom cruel, and not more revengeful than might be expected from a people so long oppressed, and in so low a stage of civilization. Highly laudable was their behaviour towards females; and Turkish women were as sacred to them as their own. They had, moreover, a certain respect for religion; and some of them are said to have been exemplary men in their domestic relations.

The songs relating to these heroes are composed in part by men of their own class, partly by the blind Rhapsodists, who go from village to village and gain their sustenance by singing them. These blind bards are comparatively seldom seen in the cities; if they come there, they choose the suburbs or the immediate neighbourhood of the gate, for their theatre. To the rural feasts, called *Panegyri*, which each village celebrates in honour of its patron saint, they repair in numbers, in order to sing and play to the dances, or amuse by their ballads. Some of them are even *improvisators*, and make verses on given themes. These, however, are exceptions; more of them are regular poets; while the greater portion are satisfied with repeating the inventions of others. Other poets, of still less pretensions, are to be found among the shepherds, the sailors, and especially among the women of all classes. In the cities, there are sometimes particular trades, among the followers of which there habitually exists poetical talent and productiveness. Thus a great portion of the songs chanted throughout Epirus, are composed by the anners of Janina.

The melody in general accompanies the ballad: and its origin is just as uncertain. The tunes of the mountain songs, especially the robber-ballads, are in the highest degree simple, consisting of prolonged notes, similar to the ancient chants of the mass. Even when the words express triumph and victory, the tune in which they are sung is mournful and melancholy. In general, the same melody is repeated with every verse. In some cases the tune comprises two verses, but never more. The music of those ballads, which have their home in the cities of the coast or the islands, is far superior, and exhibits strongly the influence of the Italians. In some melodies ancient Italian tunes are distinctly to be recognised.

The songs of the mountains, and those of the cities and the Archipelago, form in reality two distinct classes. The mountaineers despise the more delicate songs of the cities and islands, especially those of which the subject is love. They consider them as effeminate, and as the productions of a vicious degenerate race. The inhabitants of the cities, on the other hand, take very little interest in the Klephts, and their joys or sufferings; and their monotonous ballads seem to them the tedious and rude productions of semi-barbarians, not worth their attention.

The great places of concourse for all the nations of the world, the khans or taverns of Constantinople, Odessa, and other marts of commerce, are also the only places where Greek ballads, of every description, meet together; and in such places, the traveller may hear the sweet songs of Scio, as well as the powerful ballads of Olympus and Pindus. Here too even the Greeks themselves feel the tie of their common country. The Ætolian mountaineer here feels that the man from Crete is his brother; and the native of Morea becomes aware, that one common mother bore himself, the Ionian, and the Thessalian Greek.

GRENADA;* a beautiful island in the West Indies, is situated between the parallels of 12° 20′ and 11° 58′ north latitude, and 61° 20′ and 61° 35′ west longitude, nearly equi-distant from Tobago (60 miles) and the nearest point of the continent of South America. Its greatest length, north and south, is about twenty-five miles, and its greatest breadth twelve. Grenada was discovered by Columbus, in 1498, who found it fully occupied by a warlike race (the Charibs), among whom the Spaniards never attempted to form a settlement, and who remained for a century after in peaceable possession of their native home. In 1650, the French governor of Martinique, Du Parquet established a colony in Grenada, built a fort for its protection, and left the government of the island to a kinsman, named Le Compte. Within eight months after this period, we find a war of extermination carried on by the French against the Charibs. Grenada surrendered, on capitulation, in February, 1762, and, with its dependencies, was finally ceded to Great Britain, by the definitive treaty of Paris, on the 10th of February, 1763, Lucia being restored at the same time to France. The chief stipulations in favour of the inhabitants, as well by the treaty as by the articles of capitulation, were these:—First, That as they would become, by their surrender, subjects of Great Britain, they should enjoy their properties and privileges, and pay taxes, in like manner as the rest of his Majesty's subjects of the other British Leeward islands. Secondly, With respect to religion, they were put on the same footing as the inhabitants of Canada, viz., liberty was given them to exercise it according to the rites of the Romish church, as far as the laws of Great Britain permitted. Thirdly, Such of the inhabitants of Grenada as chose to quit the island, should have liberty to do so, and eighteen months allowed them to dispose of their effects. A legislative assembly was granted by Britain. On the 2d of July, 1797, a French armament, consisting of a fleet of twenty-five ships of the line, ten frigates, and 5000 troops, under the command of the Count d'Estaing, appeared off the harbour and town of St George. The whole force of the island was composed of 90 men of the forty-eighth regiment, 300 militia of the island, and 150 seamen from the merchant ships; and its fortifications consisted chiefly of an intrenchment, which had been hastily thrown up round the summit of Hospital hill. This entrenchment the Count d'Estaing invested the next day, at the head of 3000 of his best forces, which he led up in three columns, and, after a desperate conflict and the loss of 300 men, carried the lines. Never did so small a body of men make a nobler defence against such inequality of numbers. The governor (lord Macartney) and the remains of his little garrison immediately retired into the old fort at the mouth of the harbour, which, however, was wholly untenable, being commanded by the Hospital hill battery, the guns of which, having been most unfortunately left unspiked, were now turned against them. At daybreak the French opened a battery of two twenty-four pounders against the walls of the old fort. In this situation, the governor and inhabitants had no alternative but an unconditional surrender; and the Count d'Estaing became master of the island. Grenada and the Grenadines were restored to Great Britain, with all the other captured islands in the West Indies (Tobago excepted), by the general pacification which took place in 1793. An insurrection, fomented, it was said by the French revolutionists, broke out in March, 1795, which was not finally terminated until July, 1796. During the continuance of the disturbance, the greatest distress prevailed, and the most horrid murders were perpetrated by the infatuated rebels; wherever they appeared, devastation followed them; and, from the direful effects of their cruelty and rapine, Grenada has never recovered the flourishing state which it had previously enjoyed.

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* Abridged from "The British Colonial Library" by R. M. Martin, who owns his obligations for many of the details to the Grenada Almanac.

Grenada is divided into six parishes or districts, Saints Patrick, Andrew, John, Mark, David, and George. The two first named are the most productive in sugar, cocoa, and coffee. St John and Mark are mountainous, and the two latter named are rather less so. The principal (St George) contains the capital of that name, and the fortifications and military posts of Richmond hill, Fort king George, Hospital hill, and Cardinal heights; it is also the chief sea-port, the residence of the governor, and the station of the court of judicature, &c. The population of the capital and parish is about 10,000. St George, the capital, is situated within an amphitheatre of hills, with a good harbour in front. The houses are well and tastefully built of stone or brick, with sashed windows and tiled roofs, with the streets well ventilated, and a spacious handsome square in the centre. The harbour is said to be capable of containing 1000 ships, of 350 tons each, secure from storms. The population consists of 4000, of whom [illegible] are whites, and 2000 free coloured.

The dependencies of Grenada are, the island of Carriacou, and such of the small islands called Grenadines, as lay between it and Grenada. These are a cluster of isles, of more or less extent, between St Vincent and Grenada; the largest are Becquia, Canuan, Urion, and Carriacou: the last-named alone are dependent on Grenada; many are inhabited, and several well cultivated, producing small quantities of sugar, rum, molasses, cotton, fruits, vegetables, poultry, live stock, &c. in great abundance. Carriacou constitutes a parish, containing, according to estimate, 6913 acres of land. it is about nineteen miles in circumference. In the town of Hillsborough is a church and rectory. The island is, in general, fertile, and well cultivated and the successful mode of the management of slaves is amply manifested in their constant increase. Cotton was formerly the chief article of cultivation, and about 1,000,000 lbs. was annually exported. Eight of the principal estates are now cultivated in sugar; and the average produce of that article in a good season is upwards of [illegible] lbs. The island is however greatly exposed to suffer from droughts.

In 1762, when Grenada surrendered to the British arms, it is said to have yielded annually, together with its dependencies, the Grenadines, a quantity of clay and muscovado sugar, equal to 11,[illegible] hogsheads, of fifteen cwt. each, and 27,000 lbs. of indigo. The principal vegetable staples at present are sugar, cocoa, coffee, and cotton; and the following return shows the produce made in Grenada and the Grenadines in 1830.

Parishes and Island.	Sugar.	Rum.	Molasses.	Coffee.	Cocoa.	Cotton.
	lbs.	Gals.	Gals.	lbs.	lbs.	lbs.
Par. St George	3 179,916	122,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
— Mark's...	958 276	34,53[illegible]	11,7[illegible]	[illegible]	[illegible]	
— John......	913 267	23,450	7,[illegible]	[illegible]	[illegible]	
— Patrick...	6,214,250	274,[illegible]	[illegible]	[illegible]	-	[illegible]
— Andrew's	6,756,021	[illegible]	[illegible]	1[illegible]	[illegible]	
— David's...	1,863,443	114,560.	6,[illegible]	1144	4,[illegible]	
Isl. of Carriacou	2,226,700	9,986	164,313	..		[illegible]
Total....	22,100,963	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The prices of produce in colonial currency was in 1832:—

Sugar.	Rum.	Molasses.	Cotton.	Coffee.	Cocoa.
per 100-lbs.	per Gallon.	per Gallon.	per lb.	per lb.	per lb.
30s.	2s.	1s. 6d.	6d.	1s. [illegible]	[illegible]

The following return shows the population of Grenada and the Grenadines, Dec. 31, [illegible] —

Parishes.	Free, White and Coloured.		Slaves.		Total Males.	Total Females.	[illegible]
	Males.	Females.	Males.	Females.			
Town of St George	922	1340	785	[illegible]	[illegible]	[illegible]	[illegible]
Parish of St do. ..	311	348	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
——— John	166	225	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
——— Marks ..	71	[illegible]	646	730	[illegible]	[illegible]	[illegible]
——— Patrick..	181	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
——— Andrew.	[illegible]	377	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
——— David's..	124	165	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Island of Carriacou	307	296	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total......	2210	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The white population was, in 1829, town of St George, 177 males, 107 females; parish of ditto, 90 males, 28 females; St John's, 38 males, 34 females; St Mark, 25 males, 10 females; St Patrick, 84 males, 3 females; St Andrew, 94 males, 8 females; St David's, 38 males, 11 females; Carriacou isle, 50 males, 4 females:—Total, 596 males, 205 females;—total, coloured males, 1562; females, 2224.

The return to the slave compensation commissioners gives the number of slaves as 23,536; average value of each, £59 6s.; relative value of the slaves, £1,395,684; proportion of £20,000,000 to which Grenada is entitled, £616,444.

The people are ruled by a lieutenant governor, council, and house of assembly. The council consists of twelve members, and the assembly of twenty-six. In all cases the common statute law of England is the rule of justice, unless when particular laws of the island interfere. Since its restoration to Great Britain, in 1783, a protestant clergy have been established by law. Four clergymen are allotted to the whole, and each is provided with an annual stipend of £330 currency, £60 for house-rent, and a considerable portion of valuable glebe-land, which had formerly been appropriated to the support of the Romish clergy, for whose benefit a part of the grant is still reserved. There are eight places of worship, capable of containing 2870 persons; and the expenses of the church establishment to the colonists is about £1500 sterling per annum; that of five public schools is £430.

The following is the Grenada colonial revenue and expenditure, from 1821 to 1831, in pounds *sterling*:—

Years.	Gross Revenue.	EXPENDITURE.		
		Civil.	Military.	Total.
1821	11,325	10,512	800	11,312
1822	12,302	11,592	555	12,147
1823	10,360	8,722	720	9,442
1824	13,069	8,311	1704	10,015
1825	12,740	11,456	960	12,416
1826	16,658	15,273	659	15,931
1827	12,473	12,466	727	13,193
1829	13,810	11,304	838	12,142
1829	12,443	11,302	822	11,964
1830	12,268	11,132	761	12,722
1831	12,513	12,630	719	13,340

Principal exports from Grenada (except cocoa):—

Years.	Sugar.	Rum.	Molasses.	Coffee.
	Hgs.	Pns.	Pns.	Bags.
1823	16,766	11,288	3799	222
1824	5,263	8,663	1869	147
1825	15,848	7,964	2945	11
1826	15,441	8,358	2498	176
				lbs.
1827	12,696	7,730	1403	17,120
1828	20.171	9,464	3216	28,320
1829	No Returns.	No Returns.		
1830	13,268	2,777	864	31.504
				Bags.
1831	11,908	6,634	2464	6,103

Shipping employed by Grenada, in 1832:—

Places.	Inwards.		Outwards.	
	Ships.	Tons.	Ships.	Tons.
Great Britain	34	9899	34	9666
British Colonies..........	170	10504	178	11008
United States..............	25	4026	17	2956
Foreign States	32	1141	27	1282
Total..........	261	25570	256	24914
	1850	Men	1779	Men

GRENVILLE, William Windham, Lord Grenville, a distinguished statesman, was born Oct. 25, 1759, the third son of George Grenville, prime minister of England in 1763—5. He was returned to parliament in 1782; in 1789 he was elected Speaker of the House of Commons; the same year he was appointed secretary of state for the home department; in 1790 he was raised to the peerage, and the same year became secretary of state for foreign affairs, which office he retained till the resignation of Mr Pitt in 1801. He was the able representative and echo of that minister in the upper house. On the return of Mr Pitt to the premiership in 1804, without having stipulated for Catholic emancipation, lord Grenville refused to join him, and from that time till the death of Mr Pitt, he took a prominent part in the ranks of opposition. On the death of Mr Pitt in 1806, lord Grenville was appointed first lord of the treasury, at the head of a coalition ministry, which was of short duration; and he did not subsequently accept any prominent political office. In 1795, the profitable, but almost sinecure, office of auditor of the exchequer (salary £4,000) was conferred upon him; and in 1809, he was elected chancellor of the university of Oxford;—and these two offices he held till his death, which took place on the 12th Jan. 1834. The secret of the authorship of "Junius" is said to have been entrusted to lord Grenville.

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HALIFAX, (*a.*) an ancient and populous town the West Riding of the county of York, 197 les N.N.W. from London, and 42 S.W. from rk. The origin of the name is thus given by hittaker: Where the parish church of Halifax w stands, there stood anciently a hermitage dedicated to St John the Baptist, the reputed sanctity of which attracted a great number of pilgrims from all quarters. Four ways, by which the modern town of Halifax is entered, still distinctly point to the church as their common centre; these were the roads by which the pilgrims approached the place of devotion, and hence the name of Halifax, or Holy Ways, *fax* being in Norman-French, an old plural noun denoting "highways." Halifax owes its prosperity to the vast increase of its woollen manufactures from the reign of Henry VII., when the manufacturers in the Spanish Netherlands, seeking refuge from the tyranny of the duke of Alva, settled in Halifax. Within a century, this place became so populous, that 12,000 men were sent from hence to join Queen Elizabeth's troops during an insurrection in the north. In 1642, the town was garrisoned by the forces of the parliament, whose cause the inhabitants seem to have espoused. Some idea may be formed of the extent and value of the woollen trade by the institution of a law for protection to the clothiers of Halifax against the depredations their goods were exposed to during their manufacture. The clothes being of necessity left all night in the fields to dry, were often stolen. By this local enactment, the magistrates were empowered to try and punish all persons stealing property valued at 1s. 1½d., within the precincts of the forest of Hardwick. The offenders were taken before the bailiff of Halifax, whose business it was to summon the constables of four townships within the liberty to require four free burgesses to appear and proceed to trial; if the accused was found guilty, he was executed on the principal market-day, by means of a machine resembling the guillotine. This was called "Gibbet Law," under which it is ascertained that, on an average, one execution took place every two years in the century preceding 1650: but on that year, the bailiff of Halifax being threatened with a prosecution, relinquished the custom, and the scaffold was taken down. The jurors, under this law, were not sworn; and bishop Hall, in his "Satires," insinuates that they were not impartial:—

> "Or some more straight-laced juror of the rest
> Impannelled on an Halifax inquest."

The earl of Morton, afterwards regent of Scotland, while in England in 1566, directed a model of the instrument to be taken, and, on his arrival in Scotland, had one of similar construction made from it. The instrument was so long unused as to obtain the name of the "Maiden;" but, in 1581, the earl himself was brought to the block, and suffered by the machine he had caused to be erected.

The chief articles of manufacture at Halifax are shalloons, taminets, moreens, shags, serges, baizes, coatings, and carpets; with narrow and broad cloths and kerseymeres, both for domestic use and for the army. It was some years ago computed that 10,000 pieces of shalloon alone were manufactured in this parish, considerable quantities of which were exported to Turkey and the Levant. The cloth-hall, or Piece-hall, as it is called, is a handsome edifice of free-stone, containing 315 apartments for the reception of goods in an unfinished state, which are exhibited for sale to the merchants every Saturday from ten to twelve o'clock. The manufactories are situated in the town and surrounding country, which is covered with villages, the poorer inhabitants of which are employed in spinning, carding, weaving, &c. Several cotton manufactories have been erected here, and succeed very well; and wool-cards of superior quality are made in the neighbourhood, which abounds with coal and free-stone. The Rochdale canal affords a medium of commercial intercourse with Liverpool, Manchester, and the [illegible] district; and the Calder navigation with [illegible] and Hull.

The *parish* of Halifax is very large, being seventeen miles in length, and averaging eleven in breadth. It comprises 124 square miles, or 79,200 acres. The soil is naturally sterile, but it has been highly improved. We find in our authorities conflicting statements as to the population of Halifax, which may arise from different views of its boundaries. In the population return of 1831, the figures stand thus: Halifax town, 15,382, town and parish, 109,899.

HALSTEAD; a market-town in Essex, seated on the slope of a gravelly eminence, at the foot of which the river Colne runs, and which is crossed by a bridge at the southern side of the town. It is forty miles distant from London, and has a weekly market on Fridays. The name Halstead is Saxon, denoting a *healthy place*. A college was founded here in the reign of Edward III., for a provost and eight priests, by Robert Bourchier, lord chancellor of England; this institution remained until the dissolution of the religious houses. The church is an ancient edifice and has its tower surmounted by a wooden spire, which is the third that has been raised upon it: the *first* was destroyed by lightning; the *second* was erected in 1717, at the expense of an apothecary of the name of Firk, on which occasion Prior wrote some verses, but the spire they commemorate was, like its predecessor, destroyed by lightning; after which the present was built. Population of Halstead in 1831, 4637.

HAMMERSMITH; a populous district in the county of Middlesex, on the north bank of the Thames, three and a half miles west from London. Hammersmith comprises Brook-Green, [illegible]-Green, and Shepherd's-Bush, and its population in 1831 amounted to 10,222. Its streets (with the exception of that which extends along the turnpike road,) are narrow, but the houses have a good appearance, and there are many handsome seats and villas in the vicinity. Brandenburgh house stood in this village, on the banks of the Thames. Near the church is a mansion said to be of the same antiquity with Hampton-court.

The most remarkable object in this place is the suspension-bridge over the Thames to Barnes, in Surrey, commenced in 1825 and finished in three years. The Hammersmith bridge exhibits an example of construction not common in suspension bridges; part of the road-way being supported on, and not hanging from, the main-chains. There being no natural rock on either bank of the river to which the main-chains could be secured, as is the case with most of those bridges to be found elsewhere, abutments of masonry were required, which, by their weight and magnitude, might be equally effectual. These are built of brick, faced with stone, and measure forty-five feet from back to front, forty wide, and fourteen deep, their top being on a level with the road-way: the weight of each of these masses is about 2160 tons, to resist the pull of the chains. These chains are carried through passages left in the brick work, and, entering the *face* of the abutment, pass into chambers where they are bolted by powerful bolts at the back of massive cast-iron plates, bearing against the front face of the chambers. The distance between the abutments is divided into three openings, by two suspension towers, or piers, [illegible] ing Tuscan archways, supported by a rustic base, rising from the bed of the river; thus leaving three water-ways, two of 144, and the centre one of 400 feet. There are eight main-chains, arranged in four lines of twos, in each of which the chains are over one another, and not side by side. The two outer lines of chains consist of links eight feet ten inches long, made of three bars, each five inches broad and one thick: the two inner lines of chains have each six such bars, or are twice the width of the others. There are, therefore, altogether, thirty-six lines of bars, presenting a sectional surface of 180 square inches: the links are put together with coupling plates, fifteen inches long, eight broad, and one thick, in a similar manner to those of the Menai. The chains pass over friction rollers on the tops of the piers, as usual, but the rollers are supported in frames, so as to form two concentric arcs, one for each set of chains; the curves of the chains are tangents to these arcs, and the links that rest on the rollers are forged curved, to fit the arc formed by the set of rollers they rest on. By this construction there is no unequal strain on any part of the chains, and their pressure is made to act perpendicularly on the piers; the back-stays descending towards the abutments at an angle equal to that at which the chains between the piers descend from the rollers. The platform is divided by the suspension-rods into a central carriage-way, twenty feet wide, and a five feet foot-path on each side. The transverse beams supported by the vertical rods, are in pairs, resting on a square plate attached to the end of each rod: besides longitudinal beams bolted down to these, and all the other usual precautions for durability, strength, and stiffness, the longitudinal beams, on each side the carriage-way, carry a set of trusses, like those of the roof of a house, which contribute materially to this object. The consequence of this admirable construction is, that the degree of curvature in which the road-way was originally laid, has not diminished at all, showing that no part of the abutments, piers, chains, suspension-rods, or framing, has given way; and yet the motion caused by a single carriage passing is perceptible to a foot-passenger, and the longer suspension-rods vibrate sensibly to the eye, proving that the strength and firmness is obtained by scientific skill in design and execution, not by a lavish expenditure of material. The back-stays intersect the road-way between the abutments and piers, at about one-fourth the distance from the former to the latter; for this fourth, consequently, the platform is above the chains, the transverse beams being supported by iron plates, resting on the coupling links of the lowermost line of chains beneath.

HANOVER, (*a.*) Since the accession of the house of Brunswick to the British crown, Hanover has been under the government of the kings of Great Britain; George I. was the second elector of Hanover when he succeeded to the throne of Britain in 1714. In 1814, Hanover was erected into a kingdom, and the king of Great Britain also became king of Hanover. But it is now separated from the British crown, inasmuch as the salic law, which excludes females from the throne, is in force in Hanover; and on the death of William IV., the crown of Hanover passed to his eldest brother, Ernest Augustus, formerly duke of Cumberland, who was born in 1771, and by his marriage in 1815 to the princess dowager of Solms, sister of the duke of Mecklenburg-Strelitz, has issue one son, George Frederick, born on the 27th May, 1819. On the 12th July, 1837, king Ernest issued a proclamation in which he expressed his dissatisfaction with the new constitution of Hanover, which had been acted upon by George IV. and William IV. declaring that he regarded it, "neither in form nor substance binding upon him." On the 1st Nov. same year, an ordinance was promulgated by king Ernest, suppressing the fundamental law of the state established by William IV. on the 26th Sept. 1833. This caused much dissatisfaction in Hanover, and a strong sensation throughout Germany. The election of a deputy from the city of Hanover to the Assembly took place in Feb. 1838, when the popular, in opposition to the government candidate, was elected. This election, however, was declared void by the king, because it was made with a reservation of the rights acquired by the city of Hanover by the constitution of 1833. In a long proclamation, dated Feb. 15, 1839, the king declared, that the legal representative constitution of the kingdom was settled by the royal letters patent of 7th Dec. 1819, and confirmed by the congress of Vienna in 1820, and that the change made in Sept. 1833 was destitute of constitutional form. A message to the assembly of the same date declares, that the constitution of 1819 alone is to be considered in force. The magistracy petitioned the Germanic diet to protect their laws and liberties, and to restore the constitution of 1833. To their petition the signature of M. Rumann, chief of the magistracy, was appended; and the king immediately suspended him from his office, and ordered him to be tried for his offence by the Hanoverian privy council. But the citizens, on the 17th July, proceeded in a body to the palace, and petitioned that Rumann should be tried by a municipal corporation. Serious riots occurred on the 19th July, which were not suppressed without bloodshed.

HARROW-ON-THE HILL, (*a.*) The free school of Harrow was established in 1571. The person to whose benevolence and care, England is indebted for one of her best public schools, was John Lyon, a wealthy yeoman, who had previously spent a considerable sum in teaching poor children. In the year 1590, two years before his death, he drew up a set of statutes for the school, with full instructions for the disposal of the estates, which he intended to appropriate to various charitable uses, at the same time appointing six trustees of his property; the election of successors to be made by themselves as a body. The revenues of Mr Lyon's estates are now considerable. But it has happened, unfortunately for the interests of the foundation, that those portions of his property which have, from their situation, acquired the greatest increase of value, such as certain lands near London, at Kilburn, and in the parish of St Mary-le-bone, were appropriated by him to other charitable purposes, especially the repairing of roads, in the neighbourhood of his own home. The late Richard Gregory, Esq. of county Galway, Ireland, by a codicil to his will, dated Oct. 22, 1838, bequeathed to Harrow School 140 volumes of Roman classics, an annual gold medal, value ten guineas, and a hundred pounds a year for ever, to found an exhibition for boys educated at Harrow going to the Oxford or Cambridge university. Several scholarships have also been founded by Joseph Neeld, Esq., one of the governors of the school.

The rules to be observed in the management of the school were drawn up by Mr Lyon. These are precise and, in some particulars, extremely curious. The system of education is marked out as a *classical* one. The modes of correction are specified. The amusements of the scholars are limited to "*driving a top, tossing a hand-ball, running, shooting, and no other.*" The twenty-second rule contains the provision "that *no girls* shall be received to be taught in the same school." The practice of archery was common in the school from the period of its foundation. Every boy was entitled by the statutes to possess "*bow-shafts, bow-strings*, and a *bracer*, to exercise shooting." Archery was a sport formerly used at many schools. The name which a part of the play-grounds at Eton college retains, that of the *shooting-fields*, may be attributed to a similar custom: and the term, *the butts*, will be found in the immediate neighbourhood of other schools besides Harrow. There is an instance of this in the college-school at Warwick, and at other places. The public exhibitions of archery at Harrow, were annual, and can be traced back for more than a century. The last silver arrow was contended for in July, 1771. There were good and sufficient reasons for the abolition of this practice, and the more scholar-like and intellectual one of public speeches has taken its place. These are held every year, in May, June, and July. On the 22d Oct. 1839, a fire broke out at Harrow school, which destroyed a great part of the building.

HARTLEPOOL; a sea-port town in the county of Durham, 253 miles N.W. from London. As a sea-port, it is dependent upon Newcastle, and it formerly possessed a harbour within the walls, defended by two strong towers, which are now decayed, and the harbour is choked up; the modern harbour, which will only admit vessels of light burden, being to the south of the town. In the reign of Edward III. this port furnished five large ships to the royal navy, and was next in rank to the city of Durham. The fishery on the coast forms the principal employment of the inhabitants, which is, however, aided by several extensive coal-works in the vicinity. The town consists of one principal and several small streets; the neighbouring scenery is delightful, particularly along the sea-shore, where some good houses have been erected for the accommodation of those who resort to town for seabathing quarters. Here are two fine chalybeates, impregnated with sulphur. Population in 1831, 1330.

HASLEWOOD, JOSEPH, Esq., of Conduit Street, Solicitor, and F. S. A., was born in London, Nov. 5, 1769, and early in life was taken into the office of his uncle, Mr Dewbery, a solicitor in Conduit Street, whose partner and successor in business he subsequently became. Mr Haslewood's fondness for early English literature and bibliography naturally led him to the collection of a considerable library of black-letter lore and Elizabethan poetry, and the pages and fly-leaves of his books bear ample testimony, by their numerous MS. notanda, that he was not only a collector, but a reader of the works with which his shelves were so amply furnished. In books on angling, and in those of hawking and field sports, his collection was confessedly unrivalled. He was one of the founders of the Roxburgh Club, and left a very curious volume, tracing the rise of that society. His volume, under the quaint title of "Roxburgh Revels," records the annual festivities of the Club from its first meeting at the Old St Alban's Tavern, in 1812. Although neither a classical scholar nor an elegant writer, Mr Haslewood was a laborious and faithful editor of many rare and beautiful reprints of early English poetry and prose, which might otherwise have perished; and assisted several of the members of the Roxburgh Club in correcting and printing the volumes which they occasionally presented to the society. He died 21st Sept. 1833.

HATS. The word Hat seems to be derived from the Saxon *haet*, German, *Hett*, i. e. a cover for the head. The modern term is used in distinction from a bonnet or cap; but, anciently, even a helmet was so denominated, as in the romance of *Kyng Alexander*—

Of sum weore the brayn [illegible]
Al under theo iren hat.

The hats of the Saxons (the most ancient of which we can find any mention made), were supposed to have been by no means universally worn; but of woollen hats, however, they are known to have possessed. In the *Canterbury Tales* of Chaucer, the merchant wears "on his head a Flandrish beaver hat;" and, in the Chronicle of Froissart, we hear frequently of the hats of the time of Edward III. and Richard II. White hats were, even in those days, worn at Ghent, in Flanders, and seem to have been used as the political badge of a party, though this is not quite certain. "Hats of bever and eustryde's (ostrich) fethers," are also mentioned. In the Journal of Beckington, secretary to Henry VI., 1442, is mentioned a "[illegible] hat given as a new year's gift." Among the inventory of effects of Sir John Fastolfe, 1459, "; hatte of bever, lynyd withe damaske gilt, and also ij [illegible] hattes." In the *Ship of Fools*, printed in [illegible], is an account of "the great hats that is set all upon one side." We have thus shown the antiquity of white hats, beaver hats, and hats worn on one side.

In the reign of Henry VIII. we find hats frequently mentioned, and in the privy-purse expenses of that monarch is this entry:—"Item, paid for a hatte and plume for the king in Bolcyn, (Boulogne) xvs." As the value of money was much greater then than it is at present, we may conclude that hats were still articles of luxury, and only worn by the rich.

In the expenses of a nobleman at college, [illegible] we find "a broad riding hat;" "a hat lined with velvet." About this time high-crowned hats came into fashion. In the reign of queen Elizabeth, hats appear to have become common, and beaver hats seem to have been first introduced into common wear. The following curious passage is from a rare book, published about 1585, called Stubbe's *Anatomie of Abuses*.—"Sometimes they use them sharpe on the crowne, perking up like the spere or shaft of a steeple, standing a quarter of a yard above the crowne of their heads; some more, some lesse, as please the fantasies of their inconstant mindes. Othersome be flat, and broade on the crowne, like the battlements of a house. Another sort have rounde crownes, sometimes with one kind of band, sometimes with another,—now black, now white, now russed, now redde, now greene, now yellow; now this, now that; never content with one colour or fashion two dayes to an end. And as the fashions be rare and strange, so is the stuffe whereof their hattes be made divers also; for some are of silk, some of velvet, some of taffatie, some of sarcenet, some of wool, and which is more curious, some of a certaine kinde of fine haire; these they call bever hattes of xx., xxx., or xl. shillings price, fetched from beyonde the seas, from whence a greate sorte of other vanities doe come besides; and so common a thing it is, that every servyng man, countreiman, and other, even all indifferently, doe weare of these hattes; for he is of no account or estimation amongst men, if he have not a velvet or taffatie hat, and that must be pinched and cunningly carved of the best fashion." Shortly afterwards the rim became remarkably broad, and when much worn was liable to hang down, from thence the name of slouched hats. In 1607, a horseman's hat is recommended to be "a hat which will sit close and firme upon your head, with an indifferent narrow verge or brim, so that in the saults or bounds of your horse it may neither through widenesse or unwieldinesse fall from your head, nor with the breadth of the brim fall into your eies, and impeach your sight, both which are verie grosse errors." In a play, called "*A Challenge for Beauty*," written by Heywood in 1636, there is a song describing the fashions of different nations, in words which will equally apply to the present period:—

> The Turk in linen wraps his head,
> The Persian his in lawn too;
> The Russe with sables furs his cap,
> And change will not be drawn to;
> The Spaniard's constant to his block,
> The French inconstant ever;
> But of all felts that may be felt,
> Give me your English beaver.

During the reign of Charles I., the commonwealth, and the reigns of Charles II., James II., and William III., very broad brims were in fashion. The inconvenience of these very broad brims being at length felt, first one, and then two flaps were made to turn up, until about the time of queen Anne, when the third flap was turned up, and the regular cocked hat formed. Cocked hats of various sorts, were for the ensuing fifty or sixty years, much in vogue. In the *Tatler* and *Spectator* they are frequently alluded to, and the "Monmouth Cock," the "Ramillies Cock," the "Hunting Cock," and the "Military Cock," are alluded to In No. 532 is a letter from John Sly, haberdasher of hats, in which he says, "his hats for men of law and physic do but just turn up, to give a little life to their sagacity; his military hats glare full in the face; and he has prepared a familiar easy cock for all good companions, between the above extremes." About 1750, round hats became very prevalent among the lower orders, and cocked hats were considered as a mark of distinction from them. In the *Rambler*, dated 1751, a young gentleman ays, that his mother exclaimed, "she would rather *ollow me to* the grave than see me tear my clothes nd hang down my head, sneak about with dirty hoes, blotted fingers, hair unpowdered, and hat *ncocked.*" About 1780 round hats first became ashionable, and about 1790 cocked hats disappeared rom common wear.

Feathers have been used as ornaments for the hat r cap from an early period. They were commonly orn as late as the reign of queen Anne. In the *atler*, No VII., "The bridegroom's feathers on is hat all drooped." It is also mentioned in other laces in the *Tatler*, *Spectator*, &c. In some reign countries it is considered a mark of honour. . heron's plume, set in diamonds, was presented y the sultan to lord Nelson. In China, peacocks' athers are used for the same purpose. In lord Macartney's *Embassy to China*, it is said, that "in this dignity there are three degrees, according to the number of feathers granted to the wearer. He to whom three feathers had been granted, thought himself thrice great and happy;" "some were honoured with peacocks' feathers, stuck in an agate tube, and pendant from the bonnet." In modern times, and at present, feathers in the hat are only worn by dignitaries on state occasions, or by military men. Joachim Murat, once king of Naples, executed in 1814, generally wore a splendid ostrich plume in battle. Some of our readers may remember the superb plume worn by king George IV. at his coronation. Cocks' feathers, with the edges tinged in crimson, are common in the military dresses of officers of rank in England and Russia. In France a fringe of white feathers is worn.

In the days of chivalry, and for some short time afterwards, it was frequently the fashion to wear some distinguishing badge in the hat. It has continued to our times in the shape of a cockade. These badges, when given by a lady, were of course highly valued and carefully preserved; in the first year of Henry IV., we hear of the conspirators under the duke of Exeter that, "one ware on his head-piece his lady's sleve, and another bare on his helme the glove of his dearlyng." This custom is constantly alluded to in the history of those times. It is said, that a glove in the hat was worn as the favour of a mistress, the memorial of a friend, or a mark to be challenged as an enemy. When an adversary gave a challenge, he threw down his glove, which the other placed in his hat, whence the origin of this custom. Wearing yew in the hat, in mourning, is mentioned by G. Wither, in 1633;

> But then, why mourn I not to open view?
> In sable robes, according to the rites?
> Why is my hat without a branch of yeugh?

We do not know whether this custom of wearing yew as mourning still prevails to any extent in England, but a popular doggrel of the day, beginning,

> "All round my hat, I wear the green willow,"

would seem to indicate that it is not entirely extinct. Particular plants were worn as badges of a party or family in ancient times. The Plantagenets derived their name from the circumstance of an ancestor wearing heather, or broom, in his helmet, (in Latin, *Planta genista.*) In Sir Walter Scott's novels, the *Monastery* and the *Abbot*, many of our readers will remember the holly, the badge of the Avenel family. The highland clans had each a peculiar tree or plant. The Welsh wear leeks on St David's day, in memory of the gallant behaviour of a party of Welsh troops in a battle, where, being posted in a garden, they put leeks in their caps. The Irish wear the shamrock on St Patrick's day, in honour of that saint, who is said to have refuted some persons who were arguing against the doctrine of the trinity, by plucking a leaf of it, and showing them that it contained Three in One. Oak-leaves are worn in many parts of the country, in memory of king Charles II. sheltering himself from his pursuers in that tree after the battle of Worcester; laurel is worn by the foot guards on the 18th of June, in memory of Waterloo.

Of cockades, the white is the well known badge of the families of Stuart and Bourbon; blue, white, and red, of France; and blue, yellow, and red, of Belgium; orange, of the family of Orange-

Nassau, and thus of Holland, whence the party cry of *orange boven*, "Up with the orange;" black and yellow of Austria, black and white of Prussia, and red of Spain. Our own is, as must be known to all, black. It is the family badge of the electors of Hanover. White cockades are worn by servants in England at weddings, and it has been the fashion to have them as large as possible. Gold and silver hat-bands and loops were formerly much in fashion, but they are now confined to livery servants.

Hat Manufacture.—Hats formed of straw, willow, the bark of trees, and other materials of the same description, we find among the manufactures of nations in an early state of civilization, but the process by which a beaver-hat is formed, requires great judgment. an intimate knowledge of the effect of heat and moisture upon certain substances, and considerable mechanical skill. Great progress, therefore, must have taken place in the arts of life, in any nation, before a beaver-hat can be made.

The first part of the manufacture of a beaver-hat, is the making of what is called the *body*. The materials of which the body is formed, are rabbits' down, lambs' wool, and a small quantity of camels' hair. The camels' hair, which is a much longer fibre than either of the other two materials, assists greatly in binding together the substance of the body, much after the same manner as the hair used by the plasterer, in the making of mortar.

Proportionate quantities of these three substances being weighed, they undergo the operation of *bowing*. The materials are laid upon a level board, enclosed on all sides but one, to prevent their loss, when the bowstring is brought into action. The bow is large and strong, and formed of wood; not pliable, like the bow of an archer, but answering the purpose of a frame, over which a strong string of catgut is strained. The material being spread on the board, the bow is drawn down nearly to the table, the middle of its frame being held firmly in the workman's left hand, the string being now almost on a level with the wool, is drawn out with the right hand, and when allowed to recoil, it strikes the wool, and separates and mixes its fibres; which, after floating for a time in the air, gently descend, and lie in a loose flock, on the surface of the board. The bowing being repeated for a certain time, the wool is drawn into a conical or triangular shape, and while lying in this form on the board, it is pressed into a more firm substance, by the hardening-skin, a piece of half-tanned leather. When sufficiently solid for the purpose, a kind of paper model, that is, a piece of stiff paper, of the same triangular form as the hardened wool, but somewhat smaller, is laid on its surface, and the edges are folded over; the paper and wool are then laid aside, and another and equal quantity of material undergoes the same process. When ready for the purpose, the first portion which was prepared, along with the paper mould, is laid with its upper surface, downwards, on the second portion of prepared wool, the edges of which are also folded over, as in the first instance; by this means, the paper mould is covered on both sides with wool, and if both portions were united, would form a conical cap (the *body*.) In order, therefore, to unite the fibres, the newly-formed body is sprinkled with water, and pressed and rolled in various directions.

The paper mould is now removed and the cap is taken to the *battery*. This battery consists of a metal vessel, called the kettle, in the centre, surrounded by six or eight inclined wooden planes, the liquid in the kettle is kept nearly boiling, by means of a flue that runs round it, connected with a furnace. The body of the hat, which is at present nearly eighteen inches in width across its opening, has now to undergo the operation of thickening, which at the same time makes it smaller. For this purpose the workman dips it in the liquor contained in the kettle: this liquor is composed of dregs of beer, and a small quantity of oil of vitriol. The effect of the hot liquor is to cause the fibres of the body to shrink, and to become more closely incorporated, as well as thickened. Between each dip into the hot liquid, the workman rolls the cap up in various directions, so as to cause the parts to become more intimately combined. When, by constant rolling and dipping, the body is reduced to its proper dimensions, it is removed from the battery and dried.

The next process is to render the body waterproof. this is done by means of a solution of shell-lac in spirits of wine; it is then fit for covering with beaver, or any other wool. To effect this, a quantity of the material intended to be used is subjected to the same process of bowing and hardening, as the wools used in forming the body; but in this case, the body itself is substituted for the paper model, and the hardened beaver is laid on both sides, so as to cover it completely. it is then carried to the battery, and dipped and rolled until the beaver has attached itself to the body. It is most singular, that in this operation, the root end of the hair or wool employed invariably attaches itself the body, so that when dry, it appears as it did when growing on the back of the animal. The body is now turned inside out, and another quantity of beaver is applied in a strip along the margin, to form the under side of the brim of the hat. It is now completely covered, but is still in the form of a conical cap.

To make this cap into the shape of a hat, it is, while still wet, drawn over a wooden block in the form of the crown of a hat, until the peak of the cap is gradually obliterated and becomes a flat surface, forming the top of the hat, and the lower border of the body is drawn out flat on the sloping board of the battery, and forms the brim. It is then dipped in cold water, which immediately stiffens it by hardening the varnish. It is next *clipped;* that is, the beaver is cut into an equal length over the surface, like the pile in velvet, and afterwards carried to be dyed. The dyeing is managed in the same manner as in dyeing any other woollen goods, by steeping it in the vat of black dye. The only remaining process it has to undergo is that of *finishing*, which is performed by heat and moisture, and the use of a heavy iron to lay the hair all in one direction. The rim is also cut of an equal width all round, and it is fit to enter the hands of the manufacturer, to be bound and lined by women.

The furs and wools of which hats are manufactured contain in their early stage of preparation, down and *hairs*, which must be removed in order to produce a material for the better description of hats. This separation is effected by a sort of winnowing machine, which wafts away the finer and lighter parts of the furs and wools from the coarser. [illegible] Parker and Harris obtained a patent in [illegible] for the invention and use of such an apparatus, whose structure and functions may be perfectly understood, from its analogy to the blowing and scutching machine of the cotton manufacture, (see *Cotton Manufacture* in body of work.) Mr Ollerenshaw's machine is now generally employed for ironing hats.

Messrs Gilman and Wilson, of Manchester, obtained a patent, in 1823, for a peculiar kind of fabric to be made of cotton, or a mixture of cotton and silk, for the covering of hats and bonnets, in imitation of beaver. The foundation of the hat may be of felt, hemp, wool, which is to be covered by the patent fabric. This debased article does not seem to have got into use; cotton, from its want of the felting property and inelasticity, being very ill-adapted for making hat-stuff.

A more ingenious invention of John Gibson, hatter, in Glasgow, consisting of an elastic fabric of whalebone, was made the subject of a patent, in June, 1824. The whalebone, being separated into threads no larger than hay stalks, is to be boiled in some alkaline liquid for removing the oil from it, and rendering it more elastic. The longest threads are to be employed for warp, the shorter for weft; and are to be woven in a hair-cloth loom. This fabric is to be passed between rollers, after which it is fit to be cut out into forms for making hats and bonnets, to be sewed together at the joints, and stiffened with a preparation of resinous varnishes, to prevent its being acted upon by perspiration or rain. A very considerable improvement in the lightness and elasticity of silk hats has been the result of this invention.

Silk hats, for several years after they were manufactured, were liable to two objections; first, the body or shell over which the silk covering is laid, was, from its hardness, apt to hurt the head; second, the edge of the crown being much exposed to blows, the silk nap soon got abraded, so as to lay bare the cotton foundation, which is not capable of taking so fine a black dye as the silk; whence the hat assumed a shabby appearance. Messrs Maybew and White, of London, hat-manufacturers, proposed in their patent of February, 1826, to remedy these defects, by making the hat body of stuff or wool, and relieving the stiffness of the inner part round the brim, by attaching a coating of beaver upon the under side of the brim, so as to render the hat pliable. Round the edge of the tip or crown, a quantity of what is called stop wool is to be attached by the ordinary operation of bowing, which will render the edge soft and elastic. The hat is to be afterwards dyed of a good black colour, both outside and inside; and being then properly stiffened and blocked, is ready for he covering of silk. The plush employed for overing silk hats, is a raised nap or pile woven sually upon a cotton foundation; and the cotton, eing incapable of receiving the same brilliant black ye as the silk, renders the hat apt to turn brown whenever the silk nap is partially worn off. The ntentees proposed to counteract this evil, by aking the foundation of the plush entirely of silk. o these two improvements, now pretty generally troduced, the present excellence of the silk hats ay be, in a good measure, ascribed.

Mr Carey, of Basford, obtained a patent in Oc- ber, 1834, for an invention of certain machinery be employed in the manufacture of hats. It nsists in the adaptation of a system of rollers, rming a machine, by means of which the opera n of roughing or plaiting of hats may be per- rmed; that is, the beaver or other fur may be de to attach itself, and work into the felt or hat body, without the necessity of the ordinary manual operations.

The improved stiffening for hat bodies proposed by Mr Blades, under his patent of January, 1828, consists in making his solution of shellac in an alkaline lye, instead of spirits of wine, or pyroxylic spirit, vulgarly called naphtha. He prepares his water-proof stiffening by mixing 18 pounds of shellac with 1½ pounds of salt of tartar (carbonate potas.), and 5½ gallons of water. These materials are to be put into a kettle, and made to boil gradually until the lac is dissolved; when the liquor will become as clear as water, without any scum upon the top, and if left to cool, will have a thin crust upon its surface of a whitish cast, mixed with the light impurities of the gum. When this skin is taken off, the hat body is to be dipped into the mixture in a cold state, so as to absorb as much as possible of it; or it may be applied with a brush or sponge. The hat body being thus stiffened, may stand till it become dry, or nearly so; and after it has been brushed, it must be immersed in very dilute sulphuric or acetic acid, in order to neutralize the potash, and cause the shellac to set. If the hats are not to be napped immediately, they may be thrown into a cistern of pure water, and taken out as wanted. Should the hat bodies have been worked at first with sulphuric acid (as usual), they must be soaked in hot water to extract the acid, and dried before the stiffening is applied; care being taken that no water falls upon the stiffened body, before it has been immersed in the acid. This ingenious chemical process has not been, to the best of my knowledge, introduced into the hat manufacture. A varnish made by dissolving shellac, mastic, sandarach, and other resins in alcohol, or the naphtha of wood vinegar, is generally employed as the stiffening and water-proof ingredient of hat bodies. A solution of caoutchouc is often applied to whalebone and horse-hair hat bodies.

The following recipe has been prescribed as a good composition for stiffening hats: four parts of shellac, one part of mastic, one half of a part of turpentine, dissolved in five parts of alcohol, by agitation and subsequent repose, without the aid of heat. This stiffening varnish should be applied quickly to the body or foundation with a soft oblong brush, in a dry and rather warm workshop; the hat being previously fitted with its inside turned outwards upon a block. The body must be immediately afterwards taken off, to prevent adhesion.

The ordinary bath for dyeing hats, employed by the London manufacturers, consists, for twelve dozen, of—

44 pounds of logwood;
12 pounds of green sulphate of iron, or copperas;
7¼ pounds of verdigris.

The copper is usually made of a semi-cylindrical shape, and should be surrounded with an iron jacket or case, into which steam may be admitted, so as to raise the temperature of the interior bath to 190° F., but no higher, otherwise the heat is apt to affect the stiffening varnish, called the gum, with which the body of the hat has been imbued. The logwood having been introduced and digested for some time, the copperas and verdigris are added in successive quantities, and in the above proportions, along with every successive two or three dozens of hats, suspended upon the dipping machine. Each set of hats, after being exposed to the bath, with occasional airings, during forty minutes, is taken off the pegs, and laid out upon the ground to be more completely blackened by the peroxidizement of the iron with the atmospheric oxygen. In three or four hours the dyeing is completed. When fully dyed, the hats are well washed in running water.

A hat of a new species has lately been invented by a hat-maker of Paris. The leading principle is, cloth stretched upon a frame of wire. To a brim of ordinary felt is attached a ring composed of a stout slip of steel, of exactly the circumference of the head. Another similar ring, of the desired size of the crown, is connected with the first by means of four double wires curving slightly inwards, and jointed in the middle. By folding inwards at the joints, the intermediate pieces of wire allow of the two rings coming nearly together, in which case the whole mechanism looks like one ring with four radii pointing towards the centre. To bring the frame to its full stretch, a third and movable ring is introduced, which, being pressed downwards against the curved wires, falls into a series of notches, all of which are upon one plane, where it rests: thus, the whole frame is opened out as far as it will go; when it in some degree resembles, in structure, the well-known species of epergne used for supporting custard at table. It will easily be conceived, that, if a crown be fitted upon the second of the rings, and the space between that ring and the brim filled with a piece of cloth of the requisite kind, a complete hat is formed. It is only further necessary to mention, that, to an interior lining or rather more than the ordinary depth, a false crown is attached, and this crown, again, to the *third* ring, so that the only process required for causing the crown to sink into the brim, is to pull in a particular way at a certain part of the false crown, till the ring is jerked out from the notches, when the whole collapses into a bulk little greater than that of a common round supper plate. The utility of such a hat for travelling, for attending large assemblies, and many other purposes, must be obvious. The invention, after being honoured with several distinguished marks of approbation in Paris, and coming into general use in that city, has been patented with some improvements by a respectable hat-making firm in Edinburgh, who, in constructing it, employ a cloth of deep silk pile, of great fineness, manufactured in France, and which gives the hat a superior appearance to those of the beaver kind. In the important matters of lightness and durability, the mechanical hat, as the French call it, has an advantage over the ordinary kinds, and it is retailed at a lower rate. We are hopeful, however, that, ere long, as the means for carrying on the manufacture become improved, it will be possible to produce it at a cost little more than half of the present price of a good hat.

HEATH, James, A.R.A.; an eminent engraver, was the early associate and friend of Stothard, the artist: they may be said to have commenced their career of popularity and distinction at the same time. The old "Novelist's Magazine," published by Harrison, which extends to twenty-two royal octavo volumes, is adorned by the delicately finished engravings of James Heath, from the exquisite and imperishable drawings of Thomas Stothard. This work remains at the present moment, a monument of the supremacy of the genius and skill of Heath and of Stothard. Heath's fame as an engraver extended all over the continent, and was by no one more highly appreciated than by that distinguished artist, Raphael Morghen, at Florence. During many years he confined himself to book illustrations; but it was impossible that an artist of such high capabilities should fail to strike out a more enlarged sphere for the display and exercise of his art, and with equal success. The "Death of Major Pearson," from a painting by West, and, as a companion to it, the "Death of Lord Nelson," from a painting by the same artist, the "Dead Soldier," from a picture by Wright of Derby; a whole length of General Washington, engraved from American Stuart's well-known portrait in the possession of the marquess of Lansdown and the portrait of Pitt, from the statue at Cambridge university, are a very few of the many specimens of Heath's graphic excellence. He died Nov. 15, 1834, aged seventy-eight. In private life he was esteemed and loved by the large circle in which he was known. He left behind him three children, George, serjeant-at-law; Charles, the eminent engraver; and Mrs [illegible], who is understood to be almost equal to her brother as a professor of the graphic art.

HEBER, Richard, Esq., a distinguished book collector, was the eldest son of Reginald Heber (who succeeded his eldest brother as lord of the manors of Marton, Yorkshire, and Hodnet, Shropshire) and Mary Baylie, his first wife; and was half-brother to the amiable Reginald, bishop of Calcutta, who was by a second wife. Towards this brother he acted a most affectionate part, superintended his education, took great interest in his literary efforts, and was justly proud of his talents and virtues. Mr Heber was born in Westminster on the 5th of January 1773; and was educated under the private tuition of the late learned George Glasse. He then proceeded to the University of Oxford, and was entered at Brasenose College. There he cultivated assiduously an acquaintance with the Greek and Latin classics, and acquired that taste for them which accompanied him through life, and which was the means of introducing him to the friendship of Porson, Dr Burney, and other eminent scholars. There, too, it was that he laid the foundation of his extensive collection of books. During his stay at the university, he formed the design of editing such of the Latin poets as were not printed in Barbou's collection; in pursuance of which, he published "Silius Italicus," in two volumes, in 1792. It is characterised as being a well executed and useful book. "Claudian" was printed the same year, but has not been published. The school for illustrating the Works of Shakspeare and other English authors, from the pages of contemporary writers—at the head of which were the Wartons, George Steevens, Dr Percy, bishop of Dromore, Mr Malone, and other eminent scholars—occupied, at the time Mr Heber entered life, a distinguished rank in English literature. From the writings of these gentlemen, and his acquaintance with many of them, he imbibed a taste for old English literature; and this, joined to his natural love for the drama, led him to form collections of our ancient poets and dramatic writers, which for extent and richness have never been surpassed. In the year 1804, he succeeded, on the death of his father, to the estates in Yorkshire and Shropshire, which he augmented by purchase, and considerably improved. In the year [illegible], he offered himself as representative for the university of Oxford; but was successfully opposed by the late lord Colchester. Whilst resident there as a student, he had become a great admirer of parliamentary oratory: and on any great question arising, was often known to leave the university at mid-day, to be present at the contests of Pitt, Fox, Burke, &c., generally returning to Oxford on the following day. He thus became conspicuous among his contemporaries as a warm politician; and he is supposed to have early formed the desire to become one of the representatives of the university, which was at length accomplished in 1821. He died unmarried, at Pimlico, Oct. 4, 1833.

Mr Heber's station in life, his easy fortune, his gentlemanly manners, literary acquirements, and agreeable conversation, caused his society to be courted at this time by all ranks; and few men could boast so extensive and valuable a circle of friends and acquaintances, among whom were many of the statesmen, wits, and chief literary and scientific characters of the day. The best testimony, however, to the estimation in which he was held is contained in the beautiful lines addressed to him by Sir Walter Scott, in the introduction to the sixth canto of his "Marmion."

Mr Heber was tall, strong, and well made; and, until his health was impaired, had the appearance of a person likely to live to an advanced age. In person and features he was not very unlike his brother, the bishop of Calcutta, though he was considerably taller, and better looking. He was very near-sighted. His address and manners were extremely courteous and gentlemanly. His cheerfulness and the charms of his conversation, which he knew well to adapt to please all ranks and ages, and supplied with a fund of amusing anecdote, rendered him a most acceptable and delightful companion. In addition to Greek and Latin, he acquired the Italian and French languages; and had some little knowledge of the Spanish and Portuguese. Besides the editions of Silius Italicus, and Claudian, already noticed, he superintended the publication of the third edition of "Ellis's Specimens of the English Poets," which was remodelled and greatly improved from his rich and unrivalled collection of old poetry. His valuable dramatic collection was ever in the hands of the late Mr Gifford, while he was editing Jonson, Massinger, and Ford. He also published an edition of Brewster's Translation of Persius, with the Latin text. These constitute, so far as is known, the extent of his literary labours; but he has left behind him a vast monument of his industry, in the catalogue and collections of a great portion of his library.

His mania for book collecting commenced, as we have said, at an early period of life; and at very sale he was a great purchaser. His library contained many of the principal treasures possessed y the late Dr Farmer, Isaac Reed, J. Brand, George Steevens, the duke of Roxburgh, James Lindley, Benj. Heath, J. Herry, Gilb. Wakefield, . Kemble, E. Malone, R. Wilbraham, J. Dent, r Gosset, Sir M. M. Sykes, &c. He collected ith great avidity the manuscript as well as the printed works of the early English poets; and was ell acquainted with their contents and merits. e was very nearly becoming the purchaser of Mr an Francois Vandervelde's entire collection, hich was sold at Ghent, contained in 14,000 ts; and he purchased an entire library of ,000 volumes at Paris. He was in constant mmunication with most of the old booksellers in every city and town of the united kingdom; and those that periodically published catalogues frequently sent the sheets to Mr Heber by the post, as they were printed. On hearing of a curious book, he has been known to put himself into the mail coach, and travel three, four, or five hundred miles to obtain it, fearful to intrust his commission to a letter. Nor was it in English literature alone that his stores were extensive. His collection of Greek and Latin classics, Spanish, Italian, Portuguese, and French, very far exceeded any that ever was made by a private individual. His collection of *Mexican* books was singular indeed. He had an insuperable objection to books printed on large paper, because they occupied so much room on his shelves. Some years before his death he built a library at his house at Hodnet, which he is said to have filled. His residence in Pimlico, where he died, was filled like Magliabechi's at Florence, with books from the top to the bottom—every chair, every table, every passage, containing piles of erudition. He had another house in York Street, leading to Great James Street, Westminster, laden from the ground floor to the garret with curious books. He had a library in the High Street, Oxford, an immense library at Paris, another at Antwerp, another at Brussels, another at Ghent, and at other places in the Low Countries and in Germany. In short, there was neither end nor measure to his literary stores.

HEMANS, Mrs, a favourite modern poetess, was born in Duke Street, Liverpool, on the 25th Sept. 1794. Her maiden name was Felicia Dorothea Browne. Her father, a merchant in Liverpool, was a native of Ireland; her mother was a German lady, a Miss Wagner, but descended from some Venetian family, a circumstance which Mrs Hemans would playfully mention as accounting for the strong tinge of poetry and romance which pervaded her character from earliest childhood. When very young, some embarrassments took place in her father's affairs, which caused him to remove his family to Denbighshire, in North Wales. They here inhabited an old and spacious mansion (called Grwych or Griech) lying close to the sea-shore, and in front shut in by a chain of rocky hills. Her residence in this wild solitude, appears to have exercised a similar influence in developing the poetical tendencies of Felicia's mind, as the Highland hills exerted on the youthful genius of Byron. So early as the age of nine she composed some pieces which were published, with others of a little later composition, in 1808. At the date of this publication the authoress was under fourteen years of age, and her ardent sensitive spirit was so much affected by an unkind criticism which appeared, that she took to bed, and could not raise her drooping head for several days. The chastening, however, was probably of service in showing her the necessity of maturing her efforts by study and meditation. Her second production, entitled "Domestic Affections," appeared in 1812, and exhibited a progressive ripening of her powers. In the same year she was married to Captain Hemans. "This union (says her biographer, Mr Chorley) may be said to have closed, shortly before the birth of a fifth son, by a protracted separation." Several causes are said to have operated in leading to this unpleasing event. Captain Heman's health had been injured by his military career, so much as to render it necessary for him to exchange his native climate for the milder skies of Italy. It is undeniable, besides, that the tastes of the wedded pair had proved uncongenial, and their separation took place by mutual consent. Mrs Hemans afterwards lived with her children at a place called Bronwylfa, near St Asaph, whither her mother and sister had latterly removed. Here Mrs Hemans sought for the restoration of her mental composure, by ardently pursuing the studies which she loved, and by devoting herself to the education of her children. Though never placed at any public seminary, she had formerly acquired a slight knowledge of the Latin tongue, and she now made herself familiar with Italian, German, and other modern languages. This acquaintance she maintained and continued to improve through her life, as a variety of translations, from the Latin of Horace, the Portuguese of Camoens, the German of Goethe, and the Spanish of Herrera, executed at various times, will enduringly prove. One of her first compositions, after her separation from her husband in 1818, was connected with this branch of her studies—being a series of papers on Foreign Literature, which were published in the Edinburgh Magazine for 1819. The poems called the "Restoration of the Works of Art in Italy," "Modern Greece," "Tales and Historic Scenes," and the "Sceptic," were all composed during the years 1819, 1820, and 1821. Her poem of "Wallace" was published during the same period, and gained a private prize, as the poem of "Dartmoor" did a public one, from the Royal Society, in 1821. The "Siege of Valentia, the Last Constantine, and other Poems," formed a volume, published in 1823, and in the same year a tragedy, entitled the "Vespers of Palermo," was produced at Covent Garden. This play was too purely poetical for success on the stage. In 1827, she published her "Forest Sanctuary," and in the beginning of the following year her "Records of Women." In the latter year (1828,) on the occasion of her mother's death, she removed to Liverpool, and after a time took up her residence at Wavertree, a village three miles distant from that town. Early in the summer of 1829, urged by numerous invitations, Mrs Hemans paid a visit to Scotland. Her first residence was Chiefswood, the house of her accomplished friend and correspondent, colonel Hamilton, the author of Cyril Thornton. With a still more eminent admirer, Sir Walter Scott, she now became for the first time personally acquainted, and many interesting memorials of her intercourse with the great novelist are given in her letters, written during a short stay with him at Abbotsford. Mrs Hemans resided for some months at Edinburgh, after visiting Abbotsford, and was flatteringly entertained by the literary and polite circles of that city. She then returned to Wavertree, near Liverpool, and published, in the summer of 1830, her "Songs of the Affections," most of which had been published separately, in Blackwood's Magazine. In the same summer, she put into execution a long-cherished plan of visiting the Lakes in the north of England. Here she lived for some days with Mr Wordsworth at Rydal Mount, and afterwards resided for a week or two at a cottage called the Dove's Nest. From the Lakes, Mrs Hemans was again induced, in the autumn of 1830, to proceed to Scotland, where she resided chiefly at her friend Sir Robert Liston's seat of Lilburn Tower. It was during this visit at Lilburn Tower that Mrs Hemans formed a friendship, which led her to visit Dublin before returning to England. When she did return to her native country, it was only to make preparations for taking up her residence permanently in the Irish capital. Her own health had become of late precarious, from an affection of the heart, and this was one motive for the step in question. The views which she entertained for her boys formed another reason. After visiting Wales, Mrs Hemans took leave of England, in the spring of 1831, for the last time, as it unhappily proved. In Ireland, Mrs Hemans mingled little in society, excepting with a few intimate personal friends, of whom the archbishop of Dublin was one of the kindest and most attentive. The frame of the poetess was now progressively decreasing in strength, though her mind was unabated in its energies and activity. In 1833 and 1834, she prepared for the press and published three little works, "Hymns for Childhood," "National Lyrics, and Songs for Music," and "Scenes and Hymns of Life," in some of which her muse exhibited even a grander power and loftier object than it had yet done. In the beginning of 1835, she became so weak as to excite the deepest fears among her friends and the public. Her malady rapidly increased, and on the 16th of May she expired.

The harp of Mrs Hemans, it may be said, had two leading chords. The tones of the one sounded of high and chivalrous deeds and feelings, the other spoke of love, and the holy ties of domestic duty. These themes, sometimes apart, and sometimes blended together, were those on which the genius of the poetess loved to dwell and dilate. A feminine delicacy and gracefulness of thought and expression, with a rich abundance of imagery, and a never-failing harmony of versification, are the characteristics of Mrs Hemans' poetical style. A collected edition of her works, with a memoir of her life by her sister, has been published by Messrs Blackwood of Edinburgh.

Of the personal appearance of Mrs Hemans, Miss Jewsbury, afterwards Mrs Fletcher, has given the following account, describing her under the name of Egeria: "Egeria was totally different from any other woman I had ever seen, either in Italy or England. She did not dazzle—she subdued me. Other women might be more commanding, more versatile, more acute; but I never saw one so exquisitely feminine. She was lovely without being beautiful; her movements were features; and if a blind man had been privileged to pass his hand over the silken length of hair, that when unbraided flowed round her like a veil, he would have been justified in expecting softness and a love of softness, beauty and a perception of beauty, to be distinctive traits of her mind. Nor would he have been deceived. Her birth, her education, but, above all, the genius with which she was gifted, combined to inspire a passion for the ethereal, the tender, the imaginative, the heroic—in one word, the beautiful. Her knowledge was extensive and various, but, true to the first principle of her nature, it was poetry that she sought in history, scenery, character, and religious belief—poetry that guided all her studies, governed all her thoughts, coloured all her conversation. Her nature was at once simple and profound; there was no room in her mind for philosophy, or in her heart for ambition—one was filled by imagination, the other engrossed by tenderness. Her strength and her weakness alike lay in her affections; there would sometimes [illegible] her weep at a word; at others, imbue her with courage; so that she was alternately a 'falcon-hearted dove,' and a 'reed shaken with the wind.' Her voice was a sad, sweet melody, her spirits reminded me of an old poet s description of the orange-tree, with its

'Golden lamps hid in a night of green.'

or of those Spanish gardens where the pomegranate grows beside the cypress. Her gladness was like a burst of sunlight; and if in her depression she resembled night, it was night wearing her stars. I might describe, and describe for ever, but I should never succeed in portraying Egeria; she was a muse, a grace, a variable child, a dependent woman—the Italy of human beings."

HENRY, WILLIAM, M.D., F.R.S., an eminent chemist, was the son of Thomas Henry, himself an eminent chemist and medical practitioner in Manchester. He received the early part of his education chiefly in the dissenting academy established in Mosley Street, Manchester, which was subsequently removed to York. He afterwards lived for five years in the house of the late Dr Percival, of Manchester; and he was accustomed in after life to trace mainly to the example and encouragement of that eminent physician and scholar, the origin of his own literary and scientific tastes. After quitting the doctor's house, he studied medicine in the university of Edinburgh; subsequently to which he was engaged for several years in general practice, in partnership with his father. He then graduated in the same university, and was for many years one of the physicians of the Royal Manchester Infirmary.

At an early period of life his taste was first directed to the study of chemistry, by observing his father and elder brother (who died young) ardently engaged in such investigations; and so long ago as the year 1797, a paper of his was read before the royal society, and is published in their transactions. His subsequent contributions to the society were numerous; and in 1809, he had the honour of being admitted a fellow. He also acquired the distinction of having Sir Godfrey Copley's medal awarded to him by the president and council, for experimental papers published in their transactions. Of the Manchester Literary and Philosophical Society he was a distinguished member, and furnished to their transactions some important papers. To his favourite science, chemistry, he contributed during the course of his life many important accessions, particularly distinguishing himself in the difficult and delicate province of pneumatic chemistry. His analyses of gaseous bodies are singularly precise, and are still incorporated in the annals of the science as the results now most deserving of confidence. An important law in gaseous chemistry was also discovered by him; viz., that the quantity of any gas which is capable of existing in a given volume of water, increases exactly as the density of the gas above the water. As models of exact quantitative determinations in gaseous analysis, may be mentioned his memoirs on the gases obtained from the destructive distillation of coal and oil, and his ingenious and perfectly successful adaptation of the spongy platina to determine the constituents of complex gaseous mixtures not discoverable by other analytical processes. His "Elements of Chemistry" have passed through many editions. As a writer, his style was eminently precise and logical, chaste and temperate,—receiving as much embellishment from the stores of a mind richly furnished with the elegant literature of his country, and gifted by nature with a keen sensibility to the beautiful in scenery, in poetry, and in art, as was compatible with the graver topics of the exact sciences. His mind, indeed, presented an unusual combination of habits of vigorous and accurate thinking, with a correct, or rather severe taste, in the expression of his own thoughts, and in the estimation of the works of others, and with a finely touched imagination, and a warm sensibility for all that was great and noble in human action, or in the creations of human genius. He was particularly successful in the intellectual portraitures he was called upon to draw of his friends, or of his fellow-labourers in the cause of science.

Dr Henry did not, in his devotion to chemistry and the kindred sciences, neglect the culture of purely medical science. His inaugural discourse on Uric Acid; his valuable Essay on Diabetes, and his researches in that extensive class of diseases which are recognised and treated mainly by indications and remedies supplied by chemical science, demonstrate his zeal in the improvement of practical medicine. More recently, about the time when the prevalence of the Asiatic cholera in this country excited so much uneasiness, he engaged in a very important investigation on contagion; in which he proved that various contagious poisons, as the vaccine lymph, and the contagious matter or effluvium of *scarlatina*, are decomposed by a temperature considerably below that of boiling water. Upon these facts, sustained by cautious and rigid experiments, he proposed a new and simple process for disinfecting clothes or merchandise. His paper on this subject attracted great attention abroad, and contains suggestions which there is little doubt will hereafter form an element of all sound quarantine laws. Still more recently he drew up a very able report on the present state of knowledge regarding the laws of contagion, for the British Scientific Association, which was printed in their transactions.

In early youth, he sustained a severe internal injury, the consequence of a fall, from the effects of which he never wholly recovered. He was, indeed, almost at all times, a valetudinarian; and it was to this cause that he was accustomed to attribute the general delicacy of his frame, and the irritability and exciteableness of his temperament. During the last few weeks of his life, he laboured under considerable depression of spirits, and great irritability, which was increased by the severe illness of his daughter, the wife of Mr Greg, of Bury. His manner towards his domestics became altered, and he had assumed a reserved tone of conversation. His indisposition seems to have been augmented by the excitement consequent upon his attendance at the meeting of the British Scientific Association at Bristol, from which he returned home with a considerable aggravation of the symptoms he had previously exhibited; and on the morning of Friday the 2d of September, 1836, he discharged a loaded pistol into his mouth: the ball lodged in his brain, and of course death instantaneously followed. At the time of his death he was aged 61. Dr Henry's character was of the most amiable and attractive description. His affections were ardent; his means affluent; and he was liberal in patronizing those aspirants in science who attracted his attention.

HEREFORD; the capital city of Herefordshire, is situated in the middle of the county, 135 miles, W.N.W. from London, and is bordered on the southern side by the river Wye. There are various probable derivations of the word *Hereford;* in Welsh, the word Hen-ffordd signifies the *Old Road;* in Saxon, the word Hereford signifies the *Ford of the Army*. But the ancient name was *Ereinuc:* some derive it from *Harold's Port*, having been rebuilt and fortified by him after it had been destroyed by the Welsh. Hereford must have been a place of importance as early as 676, for about that period a synod was held here for the erection of a new see in Mercia, when Putta was chosen first bishop of Hereford. It was the capital of the Mercian kingdom, under the Heptarchy, and had a magnificent church as early as the time of Offa. In the time of Athelstan, the city was fortified, and the walls may still be traced. The cathedral of Hereford is a very venerable structure, although the architecture in some places is very incongruous with the general style of the building. The city abounds in charitable institutions.* Hereford has several good streets, which are broad and well paved, with many others of an inferior description. Great improvements have taken place within the last half century; the buildings in general are handsome; and the vicinity of the city, especially near the banks of the Wye, is extremely pleasant. The most important public structures not noticed, are the bishop's palace, the shire hall, a modern erection from the design of Mr Smirke, having in front a Grecian Doric portico; the town hall, a curious wooden fabric; the guildhall, the county jail, a small but neat theatre; the infirmary, a handsome building, and an asylum for lunatics. The manufactures here are those of gloves, formerly carried on to a great extent, flannels, and hats; several attempts have been made to introduce the woollen trade, but without success. Cider, hops, and tanners' bark are the grand articles of commerce; and the Wye being navigable here for barges of considerable burden, coal and other articles are brought from the Forest of Dean. Hereford was the birthplace of John Breton, who became bishop of this see, and is supposed to have been the author of a Treatise on the Laws of England, in the reign of Henry III.; of Dr Miles Smith, bishop of Gloucester, one of the translators of the Bible; of the famous Nell Gwynne; and of David Garrick. This city gives the title of viscount to the family of Devereux. Population in 1831, 10,280.

HEREFORDSHIRE; an inland county in the west of England, bounded on the north by Shropshire, on the east by Worcestershire and Gloucestershire, on the south by Monmouthshire, and on the west by Brecon and Radnorshire. In length from north to south it is about thirty-eight miles, in breadth from east to west about thirty five miles, and its circumference is about 180 miles. It includes one city (Hereford), two borough-towns, five market-towns, 221 parishes,—some statements make only 176 parishes,—and about 800,000 acres. This county is in the province of Canterbury, in the diocese of Hereford, and in the Oxford circuit. The bishopric of Hereford contains the greater part of Shropshire, four parishes in Monmouthshire, six churches and chapels in Montgomeryshire, eight in Radnorshire, twenty-one in Worcestershire, the whole county of Hereford except eleven parishes: in all, 373 churches and chapels, of which 166 are impropriate.

The principal rivers are the Wye, Lug, Munnow, Arrow, Frome, Teme, and Leddon. Of all these, the Wye is the most celebrated for its picturesque beauties; it enters the county near Clifford, and is navigable to Hereford in barges from eighteen to forty tons, but the navigation is sometimes interrupted by a scarcity of water, or by the violence of the stream when swelled by the torrents from the mountains. The Hereford and Gloucester canal, begun in 1791, is not yet completed. There is another canal from Kington to Leominster and Stourport; on it are two tunnels, one of 125, the other of 3850 yards. A line of Railway from Hereford connects that city with Abergavenny and Monmouth; another line from Kington goes to Brecon by the town of Hay.

The soil of Herefordshire is extremely fertile both in pasture and arable: it is generally a mixture of marle and clay, with a large portion of calcareous earth. The substratum is mostly limestone, of various qualities, some approaching in hardness and beauty to marble. In the parts bordering on Gloucestershire, iron ore has been frequently met with; although none has been dug of late years; yet from the considerable quantities that have been discovered imperfectly smelted, and from the remains of hand bloomeries which have been found, there is no doubt that iron works were established here in the time of the Romans.

The air of this county is in general pure, and consequently healthy, particularly between the Wye and the Severn.

The Herefordshire breed of cattle have long been esteemed superior to most if not to every other sort in the island: it certainly is a very superior class, of great size and weight, but small boned; its colour dark-red, or brown, with a white streak along the neck to the shoulder; under part of the belly and the throat white, face white or spotted; horns, bright and spreading, but not long; the head, small; the race is active, hardy, and useful for the general purposes of husbandry. The show of oxen at Michaelmas Fair, at Hereford, cannot be exceeded by any annual exhibition in England. The provincial breed of sheep is termed the *Ryeland*, from a district in the vicinity of Ross; they are small, white, and without horns; in symmetry of shape and in flavour, they are superior to most flocks in England. In quality of wool, they are unrivalled among the native breeds.

Herefordshire shows plantations of fruit trees in every aspect, on every quality of soil, and under every culture; but the soil best adapted to every kind of apples is a deep rich loam, when under the culture of the plough. The time for gathering apples is generally the middle of October. In a plentiful year (called a hit), the produce is almost beyond imagination; the trees being loaded to excess, frequently break under the weight of the apples: at these times, indeed, the branches are obliged to be supported on props, or forked poles. This excessive fruitage occurs however but seldom, and the following year is generally unproductive. In years of abundance, twenty hogsheads of [illegible] have been made from the produce of a single acre of orchard ground. The particular era when the plantations of Herefordshire acquired the peculiar eminence which they yet retain, was during the reign of Charles I., when, by the spirited exertions of lord Scudamore, and other gentlemen of the county, it became, in a manner, one entire orchard. The principal markets for the fruit liquors of this shire are London and Bristol, from which ports great quantities are sent to other markets in bottle. The county is not distinguished for manufactures, but at Ledbury and some other places, woollen cloth is made.

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* The total number of charities in Herefordshire is 720, and their aggregate annual income £12,153 3s. 6d. This revenue is distributed among 186 out of the 221 parishes of which the county consists; thus giving upon an average nearly four charities, and about £71 1s. 11d. to each parish. See an account of the Endowed Charities in Herefordshire, by James Wishaw, Esq., in the Quarterly Journal of the Statistical Society, vol. II. part iv. July, 1839.

The population of Herefordshire, according to census of 1831, was as follows:—

	Males.	Females.	Total.
	55,715	55,261	110,976
Of which there were—			
City of Hereford,	4,709	5,573	10,282
Broxash Hundred	6,066	5,715	11,781
Gray Tree Hundred,	5,833	5,853	11,686
Radlow Hundred,	6,565	6,554	13,119
Wolphy Hundred,	6,462	6,555	13,014
Wormelow Hundred	5,583	5,310	10,893

Representation of Herefordshire:—

	Members.
For the County *(no division)*	3
Hereford *(City)*	2
Leominster *(Borough)*	2
	7

By the Reform Bill, *Weobley* (40 voters) was disfranchised.

HERIOT, John, comptroller of Chelsea hospital, was born at Haddington, on the 22d of April, 1760, his father being the sheriff clerk of the county of East Lothian. After having passed through the country schools of Dunse and Coldstream, he was, in the year 1772, put to the high school of Edinburgh, in which he acquitted himself with great credit, and was then sent to the college. Various misfortunes, however, led to the breaking up of his father's little establishment in Edinburgh, and the family became dispersed. In 1778, he proceeded to London, and having entered the marine service, he embarked in the Vengeance, of seventy-four guns, commanded by the hon. captain Maitland. In this ship he proceeded, first to the coast of Africa, and afterwards to the West Indies. Captain Maitland here took the command of the Elizabeth, of seventy-four guns, and the Vengeance was assigned to commodore Hotham. This, of course, occasioned a total change of officers, and Mr Heriot was ordered on board the Preston, an old 50-gun ship. Not much liking her, he effected an exchange into the Elizabeth. In that vessel, which formed one of the fleet under the command of Sir Hyde Parker, he saw a little service; the Elizabeth being prominently engaged in an attack upon a French convoy, supported by the batteries of port Royal, and four sail of the line, on the 19th of December, 1779; and, in the battle of the 16th of April, 1780, between the British fleet, under Sir George B. Rodney, and the French fleet, under admiral Guicher, the Elizabeth maintained for a considerable time an unequal combat with two line-of-battle ships, and had nine killed, and sixteen wounded; among the latter of whom was Mr Heriot. He was also in the battle, or rather skirmish, of the 19th of May, in the same year. In July, 1780, he exchanged into the Brune frigate of thirty-two guns, commanded by captain (afterwards Sir Francis) Hartwell; and in that vessel encountered the dreadful hurricane which produced such devastation in the island of Barbadoes, on the 10th of October, 1780. So providential did Mr Heriot consider his escape on that occasion, that he kept the anniversary of the hurricane as a solemn festival for the remainder of his life. In November, 1780, the Brune was sent with despatches to England, and was afterwards employed to convoy a fleet of merchantmen to Quebec. On her return she was paid off. Having been promoted to a first lieutenantcy of the Plymouth division, Mr Heriot repaired to Plymouth, where he passed the whole summer of 1782: towards the end of that year, he was embarked on board the Salisbury, of fifty guns, and subsequently on board the Alexander, of seventy-four guns; but at the general reduction consequent upon the peace in 1783, he was placed on the half-pay list. His first act was to mortgage his half-pay, that he might assist his parents; a measure productive to him of much embarrassment and distress, but which he at the time gloried in; nor did any after occurrence lead to a diminution of the feeling which it then inspired. The next few years of his life were unmarked by any event that had not on it the impress of calamity. They were passed under very distressing circumstances, in a mere struggle for existence. During that period of sorrow and suffering, he wrote two novels: the composition of these relieved his mind from painful thought; and in one of them, "The Half-pay Officer," were detailed some adventures in which he had been personally engaged. They also produced a small fund, on which he lived for nearly two years.

Mr Heriot's pursuits now became wholly literary. He was employed in "The Oracle" at the same time that Sir James Mackintosh was retained by the proprietor of that paper to translate the French journals. Having a difference with the proprietor, he left "The Oracle," and joined "The World," of which he became the sole and responsible editor; but, in a short time, tired of the drudgery of endeavouring to redeem a falling journal, he quitted it.

Mr Heriot at length by his writings so recommended himself to one of the secretaries of the treasury, that he became his personal friend. That gentleman proposed his undertaking the establishment of a daily paper. Funds were supplied to him by two individuals connected with the government, but wholly out of their own pockets. Mr Heriot set briskly to work; a prospectus was issued in a few days, and on the 1st of October, 1792, "The Sun" appeared, and soon obtained an extensive, and, at that time, unparalleled circulation. "The Sun" was no sooner established, than Mr Heriot formed the plan of a daily morning paper, making the former a pedestal for the latter; and on the 1st of January, 1793, appeared "The True Briton." The two papers went on together; and though the labour of editing two a day was no doubt very fatiguing, yet, with the assistance of able coadjutors, Mr Heriot acquitted himself of his arduous task with great credit, until the year 1806, when he retired from its fatigues, and was appointed a commissioner of the lottery. In the year 1809, he was appointed deputy paymaster to the forces in the Windward and Leeward islands. He discharged the duties of this important post in a manner which obtained for him the high approbation of H.R.H. the duke of York; and on his return to England, in the year 1816, he was appointed comptroller of Chelsea hospital. In the year 1798, he published an account of the Battle of the Nile, drawn up from the minutes of an officer of rank in the squadron, which passed through several editions. He died on the 29th July, 1833.

HERTFORD or HARTFORD, the county town of Hertfordshire, is situated on the river Lea, twenty-one miles north from London. The Saxon monarchs often kept their court here; Alfred built a fortress to defend it against the Danes, who being entrenched at Ware, kept the surrounding country in a state of alarm. The town, in its outline, approaches to the shape of the letter Y; the castle being placed between St Andrew's street on the north, and West street and Castle street on the south, forming the horns of this figure; while the remaining part consists chiefly of Maidenhead and back streets, extending in one line east and west, and Fore street, which runs in a parallel direction with them. Among the principal edifices are the castle, founded by Edward the elder about 905, but rebuilt and probably enlarged after the conquest. In the reign of Edward III., John, king of France, taken prisoner at the battle of Poictiers, was an occasional resident in this fortress, as also was another captive prince, David, king of Scotland. It is now the property of the marquis of Salisbury. Other public buildings are the shire-house, or town-hall, erected from a design of Mr Adams, and completed in 1771; a neat sessions-house, where the assizes are held; a gaol, and penitentiary-house, built on the plan of Howard; and a market-house. The commerce of Hertford chiefly depends on the navigation of the Lea; and the most important articles of trade are wheat, flour, malt, and wool, much of which is sent to London, whence coal and other commodities are brought in exchange. Population in 1831, 5247.

HERTFORDSHIRE or HERTS; an inland county of England, of a very irregular form. On the north it is bounded for a few miles by Cambridgeshire: at a small building called Knowle's Folly, the counties of Cambridge, Herts, and Essex, meet. Essex forms the eastern boundary, divided from Herts by the Stort, and from Bishop's Stortford to its confluence with the Lea, east of Hoddesdon, to Waltham Abbey, near which it quits Hertfordshire: from Waltham Cross to West Hide, Hertfordshire abuts on Middlesex; the western boundary is formed by Buckinghamshire: and Bedfordshire bounds it on the west and north. Its greatest length is about thirty-eight miles, and its breadth about twenty-six miles: the extreme irregularity of its outline renders it very difficult to judge of its extent; it may be reckoned at about one hundred and forty miles in its boundaries; its superficial contents are estimated to amount to about 340,000 acres, or 530 square miles. Herts is in the province of Canterbury, in the dioceses of London and Lincoln, and is in the home circuit. Previously to the Roman invasion this county formed part of the territories of the Cassi and Trinobantes; at that period, Cassibelanus is said to have reigned at Verulam, now St Alban's, and was elected generalissimo of the British troops. When the southern parts of this country were afterwards settled by the Romans, this county formed part of the district called Flavia Cæsariensis. Under the Saxon heptarchy, Hertfordshire was divided between the kingdoms of the east Saxons and Mercia.

The climate is mild and the general aspect of the county is pleasant; it is most hilly towards the north, where several streams take their rise, and by their clearness show the nature of the soil to be rather hard in this part, which is not the case on the western side, the land being there rich and well-cultivated. The produce in wheat, barley, and oats is very considerable, and of the best quality. The grass lands are confined chiefly to the south side in the vicinity of Barnet. The chief trade of the county is in corn and malt, which is conveyed to London by means of the navigation of the river Lea. The manufactures, with the exception of some extensive paper-mills, are not of any importance.

The principal rivers are the Lea, and the Colne. The Lea rises near Lea Grave, in Bedfordshire, enters Herts near Bower-heath, and traverses the county from north-west to south-east, to its junction with the Stort, about a mile east of Hoddesdon; then runs nearly south, and partly forms the boundary of the county towards the east. The Maran, or Mimerun, rises near Fregmore, and with the Beane, which rises near Cromer, joins the Lea near Hertford: the Stort rises in Essex, and is navigable from Bishop's Stortford to the Lea, which is navigable from Hertford to its confluence with the Thames. There are many smaller streams, as the Rib, the Quin, the Ash, the Verulam, Velam, or Mize, the Gade, and some others, but they are principally devoted to mills. The Grand Junction canal, which commences at Braunston wharf on the Coventry canal, and runs to Old Brentford, where it joins the Thames, and also to Paddington, where it joins the Regent's canal, enters Herts above Berkhamstead, and follows the course of the Gade, and afterwards of the Colne, until it enters Middlesex.

The New River derives its supply from the Lea, the Maran, the Rib, the Quin, and Emma's Well. Perhaps no artificial stream in the world can boast of such services to the health and comfort and well-being of almost countless multitudes as the New River. Commenced by Sir Hugh Myddleton upwards of two centuries ago, it has fully realised all his most sanguine expectations, and although it effected his total ruin, it has furnished a princely revenue to his assigns.

The boroughs of Hertfordshire are Hertford and St Alban's; and the market-towns Baldock, Barnet, Berkhamstead, Bishop Stortford, Buntingford, Hatfield, Hemel Hempstead, Hitchin, Hoddesdon, Redbourn, Rickmansworth, Royston, Stevenage, Tring, Ware, and Watford. Three members of parliament are returned for the county, and two each for the boroughs of Hertford and St Alban's. Population in 1831: Males, 71,[illegible]; females, 71,945: total, 143,341.

HEXHAM, a town in the county of Northumberland, seated near the confluence of the North and South Tyne, twenty-one miles W. from Newcastle, and 278 N.N.W. from London. The town contains some good buildings, though the streets are narrow and irregular; in the centre is the market-place, a spacious and handsome quadrangle, on the south side of which are piazzas and other buildings; on the east, an ancient stone tower, forming the court-house of the manor of Hexham, and on the west, are the remains of the cathedral and conventual buildings. The principal manufacture of this place is tanned leather, for gloves, shoes, boots, &c. Many Roman antiquities have been discovered in the neighbourhood, which are contains ruins of castles and other works of the middle ages. Near the town, in 1463, was fought the sanguinary battle of Hexham, in which lord Montacute, brother of the earl of Warwick, at the head of an army of Yorkists, utterly defeated the Lancastrians, when the earl of Somerset, and several other men of rank, were taken prisoners, and immediately executed. In 1761, Hexham was the scene of domestic discord, an insurrection of the miners having taken place; they were opposed by the North York militia, and were not suppressed till after numbers of them had been killed and wounded by the troops. Several eminent persons have been connected with this place. Among the bishops of Hexham, were Cuthbert and John of Beverley, both canonized, and Acca, the friend of Bede; John of Hexham and Richard of Hexham, two monastic historians, were priors of the monastery; and Joseph Richardson, a comic writer of some eminence, was born here in 1758; John Tweddale, a learned and ingenious traveller, who died at Athens in 1799, was likewise a native of this place or its vicinity. Population of town and parish in 1831, 6042.

HIGGINS, Godfrey, Esq., F.S.A., of Skellow Grange, near Doncaster, and a magistrate for the West Riding of Yorkshire; was the only son of Godfrey Higgins, Esq., who purchased Skellow Grange, by Christiana Matterson; and succeeded his father in his estates, shortly after coming of age, May 23, 1794. Mr Higgins was the author of the following works:—"A Letter to Earl Fitz william on the Abuses of the York Lunatic Asylum," 1814, 8vo. A second Tract on the same subject, together with the Report of a Committee of the House of Commons. "A Letter to the House of Commons," written at Geneva, immediately on the passing of Mr Peel's bill for the restoration of a metallic currency, in which the difficulties of carrying that measure into effect were pointed out. "An Address to the House of Lords and Commons on the Corn Laws," in which, together with a concluding pamphlet, published in No. LIII. of "The Pamphleteer," the leading doctrines of the new school of political economy are controverted. "Horæ Sabbaticæ," in which the Christian Sabbath, or the Sunday, is shown to be a *human*, not a divine institution,—a festival, not a day of humiliation,—to be kept by all consistent Christians with joy and gladness, like Christmas Day and Easter Sunday, and not like Ash Wednesday or Good Friday. "The Celtic Druids," 1827, 4to. "Mohammed; or the Illustrious. An Apology for the Life and Character of the celebrated Prophet of Arabia," 1829, 8vo. An able refutation of some of the extraordinary opinions promulgated in this work was written by Edward Upham, Esq., the author of "The History of Budhism," and inserted in the "Gentleman's Magazine," for January, 1830. Mr Higgins made a brief reply in the following month; and Mr Upham rejoined in March.

Mr Higgins married in 1800, Jane, daughter and heiress of Richard Thorpe, Esq.; and by that lady, who died at Bath, May, 18, 1822, had one son, the present Godfrey Higgins, Esq., of Skellow Grange; and two daughters. His death took place on the 9th Aug. 1833.

HIPPURIC ACID; a peculiar organic acid, which exists in the urine of the horse and cow. It contains, according to Liebig, the organic or compound radical of the benzoic acid, and hence, when boiled with acids, it readily yields the latter.

HOARE, Prince, Esq., Secretary for Foreign Correspondence to the royal academy, F. S. A. and M.R.S.L.; was the son of Mr William Hoare, a painter, and one of the original members of the royal academy, and was born at Bath, in 1755. He began his career as an artist, under the instructions of his father; came to London at the age of seventeen as a student at the royal academy, and afterwards continued his professional education by visiting Rome in 1776, where he studied under Mengs, and had Fuseli and Northcote among his companions. On returning, in 1780, to England, he devoted himself for a while to the practice of his profession in London; but ill health compelled him to relinquish the arts, and for the recovery of his strength he took a voyage to Lisbon. On his return he directed his attention to dramatic composition; and with such success, especially in small after-pieces, that many of them still retain their original popularity. His first production was a tragedy, entitled "Such Things Were," formed on the history of Kirk's cruelty in the reign of James II., and first acted at Bath on the 2d Jan. 1788, while Mr Hoare was absent at Liverpool. On the 16th of April, in the same year, his pleasant and popular comic opera of "No Song no Supper" was first acted at Drury Lane. On the 3d of May, 1791, was produced at the same theatre his musical entertainment called "The Cave of Trophonius;" and on the 23d of May, 1792, at the Haymarket, his "Dido, Queen of Carthage," translated from Metastasio, which, though aided by the performance of Madame Mara in the principal character, by the music of Storace, and by splendid scenery, met with but a cold reception. It was, however. his first published work. On the 11th March, 1793, his farce of "The Prize, or 2, 5, 3, 8," was first acted at the Haymarket, for Signora Storace; it was very successful, and became a stock piece. On the 16th December, in the same year, he again complimented Signora Storace on a similar occasion with the first performance of his farce of "My Grandmother," which was also favourably received. In 1795 he produced a musical comedy, entitled "The Three and the Deuce," afterwards printed in 1806. His next production was "Lock and Key," a musical farce, first acted at Covent Garden, Feb. 2, 1796, with great applause; and this was followed on the 30th of April by his "Mahmoud," a musical opera, performed at Drury Lane. At the same theatre, two days after, his first dramatic production was again brought forward, for the benefit of Mrs Siddons, under the title of "Julia, or Such Things Were," and it was then published. On the 25th April, 1797, another opera from his pen, called "The Italian Villagers," was produced at Covent Garden, and in the same year he wrote a musical entertainment called "A Friend in Need." In 1799 he produced a comedy entitled "Sighs, or the Daughter," from the German of Kotzebue; and "The Captive of Spilsburg," a musical entertainment altered from the French "Le Souterrain." His subsequent dramatic works were, "Children; or Give them their Way," a comic drama, and "Indiscretion," a comedy, 1800; "Chains of the Heart, or the Slave by Choice," an opera, 1802; "The Paragraph," a musical entertainment, 1804; "Partners," a comedy, 1805; "Something to do," a comedy, 1803. In consequence of being appointed, in 1799, to the honorary post of Foreign secretary to the royal academy, he published in 4to. 1802, "Extracts from a Correspondence with the Academies of Vienna and St Petersburg, on the Cultivation of Painting, Sculpture, and Architecture," a work afterwards continued at intervals under the title of "Academic Annals." In 1806, he published "An Inquiry into the requisite Cultivation and present state of the Arts of Design in England." In 1809-10, he edited, in two volumes quarto, "The Artist," a collection of Essays, written chiefly by professional persons, and to which he contributed several papers. In 1813, he published "The Epochs of the Fine Arts, containing Historical Observations on the Use and Progress of Painting and Sculpture." Besides these various works, he was also the author of a poem entitled "Love's Victims," and of a "Life of Granville Sharp," characterised by a delicate perception of Christian excellence, as well as a just taste. His last production was an Essay "On the Moral Power of Shakspeare's Dramas," read before the royal society of literature. and printed in their transactions. With this elegant and thoughtful paper he closed his literary career, establishing by arguments and facts the indispensable union of moral truths with dramatic and all literary excellence. He died at Brighton, Dec. 22, 1834. The intellectual endowments of Mr Hoare did not surpass his benevolence, integrity, and sincerity; the mildness of his manners and kindness of his heart won him the respect and affection of the refined and enlightened circle who enjoyed his friendship. He left his library to the royal society of literature.

HOARE, SIR RICHARD COLT, bart., the historian of Wiltshire, was born in that county on the 9th Dec. 1758, being the eldest son of Sir Richard Hoare, the first baronet. In 1783, he married the eldest daughter of lord Lyttleton, by whom he had a son. She died in 1785, upon which he left England, and spent several years in foreign travel. His observations made then were, in 1818, condensed and published in four volumes, with the title, "A Classical Tour through Italy and Sicily, tending to illustrate some districts which have not been described by Mr Eustace." He also published a Tour through Wales in 1806, and one through Ireland in 1807. His chief work, however, is his history of Ancient Wiltshire, 1821, 2 vols. folio. This was not completed to the extent he originally contemplated, but sufficient was produced to entitle him to a high rank among the illustrators of British and Roman antiquities. Sir Richard died on the 19th May, 1838. Besides the above, he printed a number of small tracts on points of local topography, &c. for private circulation only, and was a contributor to the transactions of the Society of Antiquaries and the Gentleman's Magazine. By the death of his son, his landed property and baronetcy devolved on his eldest half brother, the head of an eminent banking house in London.

HOGG, JAMES, THE ETTRICK SHEPHERD, one of the most distinguished of Scotland's self-taught poets, was born in a cottage on the banks of the Ettrick, in the shire of Selkirk, on the 25th of January, 1772. His education reached no farther than being able to overcome the class that read in the Bible, and "defiling several sheets of paper in vain attempts to form a letter:" in all, he thinks "he might have been about half a year at school." A scene of uninterrupted labour and great privation marked his boyhood; and, at the age of fourteen, having gleaned from his scanty earnings the sum of five shillings, the bard in embryo laid it out in the purchase of a fiddle, on which he kept scraping away every night in the cow-house, to his own infinite delight, and the annoyance of every one around him. The Life of Wallace, and Ramsay's Gentle Shepherd, were among the first volumes that fell into his hands; and, strange to say, he was disappointed that they were not written in prose, as in attempting to follow out the line, he often lost the sense altogether. At the age of eighteen he made his first attempts in verse; and if they were of indifferent merit, ("bitterly bad," as he calls them, they were at all events voluminous and varied, as they consisted of eclogues, epistles, comedies, pastorals, &c. On a visit to Edinburgh to attend the sheep-market, he ventured on a volume, which, as might have been expected from the author being entirely unknown, and the matter rather commonplace, was consigned to an early oblivion. The attention of Sir Walter Scott, then Mr Scott, about this time having being drawn to the poetical talent of Mr Hogg, by his advice he was urged on to the publication of a volume of ballads, which shortly after was ushered into the literary world under the title of the "Mountain Bard." These compositions emanating from a rough untutored mind, bore, notwithstanding, many sweet indications of that high poetical imagination so peculiarly the gift of the author of "Kilmeny;" the ballad of "Sir David Graeme," and one or two others, standing forth as beautiful pieces of composition, and among the happiest efforts of his muse.

His "Essay on Sheep," which gained the Highland society premium, coupled with the success of the "Mountain Bard," produced such a fund as tempted him to embark in some wild agricultural scheme, which of course failed; and he then determined on settling in Edinburgh, and following out the uncertain calling of a literary adventurer. He was scarcely well warmed in his new mode of life before he got some insight into the precarious trade in which he had now enlisted. His first volume was the "Forest Minstrel:" from this, a work of no great merit, no pecuniary return was received. At this bleak and cheerless period, however, when poverty was pressing hard upon him, the well-timed benevolence of his friends Messrs Grieve and Scott, with a kindness almost parental, supplied all his wants; and, to the honour of the poet, he did not allow the merits of his kind patrons to pass without bestowing on them the meed of kind and grateful remembrance.

The "Forest Minstrel" having failed in the object of primary importance to its author (at the moment some pecuniary return), Hogg, with his poor and scanty knowledge of men and manners as they then existed, and having but barely dipped into contemporary literature, determined on starting a weekly periodical, which he christened "The Spy," the pages of which were to be wholly devoted, bating a few attempts at criticism, to moral essays, and the refined elegancies of polite literature. How he, who at this time "knew no more of human manners than a child," and "had read next to none," was fitted for his task, the reader may judge, and of course anticipate the unsuccessful termination of his work long before the expiration of the first year from its birth.

At this time, the darkest period of his life, when his literary speculations, from which he exticipated a livelihood, had all failed; harassed and disappointed, poor, and comparatively friendless—that hour when mediocrity sinks, and genius overcomes—the expectations of his few steady admirers were destined to be fully realised in the production of the "Queen's Wake;" a work which, overlooking a few defects of style, is one of the finest poetical attempts in the language. From the cold shade of neglect that had settled around him, he thus, by one bold effort, extricated himself, and emerged into the full sunshine of popularity and fame. The different tales that intersect the poem evince his complete mastery over the muse; whether stirring up the reader with the wild and hurried measures of "Young Kennedy," singing to him of the exploits of the Fairy Queen and her attendant sprites, with silver bells at each horse's mane, in the fine ballad of "Old David," descending to the queer and ludicrous in the "Witch of Fife," or in his unequalled poem of "Kilmeny" transporting him to another and a lovelier world, enriching the descriptions with an imagery almost supernatural, and presenting to his gaze landscapes of a beauty so surpassing, that earth, with all its tame realities, fades and grows dim before the sunshine of that heavenly dream. Altogether, this remarkable production emanating from a source so unexpected, produced at the time a great sensation in the literary world.

In 1815, Mr Hogg again appeared before the public in the "Pilgrims of the Sun;" a work of unequal merit, although possessing some splendid passages, well worthy of the now established fame of the poet. Its success at home was comparatively trifling; but in America two successive reprints were made of it, and ten thousand copies circulated through that country. Soon after the date of the "Pilgrims of the Sun" appeared "Mador of the Moor," a work in the Spenserian stanza, but greatly inferior to its predecessor, both in conception and in execution. The success of this work not being very satisfactory, the Shepherd now set himself down to collect pieces from the great living bards of Britain; but the refusal of Sir Walter Scott, coupled with other untoward circumstances, determined him on changing his original plan, and venturing on the bold step of writing imitations of the whole himself. Thus originated "The Poetic Mirror," a singular work, comprising many pieces of first-rate excellence; more especially the imitations of Wordsworth, Wilson, and Coleridge. This work passed into a second edition, and altogether was highly successful.

"Dramatic Tales," in two volumes, succeeded "The Mirror;" but, with the exception of "The Hunting of Badlewe," the volume contains little surpassing the ordinary standard. Not so, however, thought the author; who, laying the fault at the door of the public, and ascribing its failure entirely to bad taste on their part, abandoned poetry for the time, and set himself down seriously to excel in prose. "The Brownie of Bodsbeck and other Tales" was the result of this attempt. In 1819, he published the first volume of "The Jacobite Relics," a work of great talent, and considerable research. The second volume of this collection did not come forth until 1821; but in every point it fulfilled the expectation created by its predecessor: in the latter part of it, composed of modern imitations of Jacobite ballads, there are some of Mr Hogg's best lyrics. Very shortly after the publication of this last volume, "Winter Evening Tales" made their appearance. This work, comprising all his earlier efforts in prose, and here and there sprinkled with a legendary ballad, was one of his most successful publications. The stories of "Donald Campbell" and "Basil Lee" are among the best prose tales we know; especially the latter, which contains in the episode of the "Widow of Loch Kios" passages in the terrible and sublime to which we have no equal but in "Wandering Willie's Tale," by far the finest piece of *diablerie* in modern literature.

On the occasion of the king's visit to Scotland in 1822, Hogg welcomed his sovereign in "The Royal Jubilee, a Scottish Masque." In this poem there is an absurd blending of the serious with the ludicrous; but there are some fine touches, and not a few of his best songs are scattered throughout its pages. The Shepherd now took it into his head to become a novelist in right earnest; and in that capacity commenced writing for the London market. He now produced the "Three Perils of Man" and the "Three Perils of Woman," both in three vols. each, and other smaller prose tales. Turning from prose to poetry, Hogg came forth in an epic entitled "Queen Hynde:" not one of his happiest efforts, however, the story being too confused, and shrouded in a mystery from beginning to end, from which the reader never gets fairly cleared. Notwithstanding the fine bursts of imaginative feeling, and the scattered passages of high poetical excellence that here and there enrich the poem, we must still consider it as, on the whole, more in the light of a failure, than as any addition to his literary reputation. About this time he published in Blackwood's Magazine, a series of prose sketches under the title of "The Shepherd's Calendar;" by far the most finished and interesting, with the exception of the "Queen's Wake," of all his works. There the Shepherd was at home; recounting the deeds of his early days; or the credulous chronicler of past events, stamping with the rich impress of his genius the most homely human episodes, and endearing them to our recollection by many fine passages of quiet pastoral beauty.

In 1832 Mr Hogg visited London; and during his short sojourn there was the lion of the day. He was dined, and be-praised, and flattered by the great; every one exhibiting more anxiety than another how to show his kindness, and extend his patronage. He died at his residence at Altrive Lake, on the Yarrow, on the 21st Nov. 1835, leaving a widow and five children. A beautiful uniform edition of his prose and poetical works has since been brought out at Glasgow, with a Life by Professor Wilson, to his intimacy with whom he owed a popularity, beyond his own fame as an author, by being made to figure in the "*Noctes Ambrosianæ*" of Blackwood, sometimes as the buffoon, but at the same time always as the man of genius—of honest, warm-hearted feeling, and prolific fancy.

In personal appearance Mr Hogg was a well-built, active, and muscular man; about the middle height; with a sharp, lively gray eye, an expansive forehead, and sandy hair; with a fresh and ruddy colour on his cheek, the concomitant of a sound constitution and good health. At times when he doffed the plaid, and visited the city in his new suit of sables, he had something in his appearance akin to the homely and benevolent minister of some quiet country parish, far away among the hills: but when in his yellow vest and his brown coat, with the hearty shake of the hand, and the gruff, homely, and heartfelt inquiry after "a' at hame," we had the warm-hearted sheep-farmer;—a lover of out-of-door exploits, and athletic exercises; "an angler by the streams, and a hunter on the hills."

HOME, SIR EVERARD, an eminent surgeon, was the son of Robert Home, Esq. of Greenlaw Castle, county of Berwick, himself a practitioner of eminence, and was born in 1756. At an early age he embraced the profession of surgery, which he studied under the celebrated John Hunter, who was his brother-in-law, and which he practised with the greatest success in the metropolis, for more than forty years. His surgical publications were voluminous, and of high repute. Among them were "Lectures on Comparative Anatomy," in two vols. 4to., in which are explained the preparations in the Hunterian collection, illustrated by 171 engravings; an "Hunterian Oration" in honour of surgery, and in memory of those practitioners by whose labours it has been advanced, delivered in the theatre of the college, February 14, 1814; and "Practical Observations on the Treatment of Ulcers on the Legs, considered as a Branch of Military Surgery, 1797;" "Observations on Cancer, 1805;" and "Practical Observations on the Treatment of Stricture in the Urethra and in the Œsophagus," 3 vols. 8vo. Besides these, Sir Everard contributed largely to the philosophical transactions, and a variety of ably-written articles to the medical periodicals of the day. His late majesty when prince regent, raised him to the dignity of a baronet, by patent dated Jan. 2. 1813, and also conferred on him the appointment of sergeant-surgeon, in which office he was continued by William IV. Sir Everard was also surgeon to Chelsea hospital, and honorary professor of anatomy and surgery to the royal college of surgeons; for many years he was the president of the college. He died Aug. 31, 1832. Sir Everard married in 1792, and left a family.

HONEY STONE OR MELLITE; a mineral, crystallised in honey yellow transparent octohedrons, which is found sparingly in beds of brown coal in Saxony. It consists of alumina united to a remarkable acid, of organic origin, to which the name of mellitic acid has been given. It is composed of carbon and oxygen, with a small quantity of hydrogen and is considered by some as represented by the formula $C_4\ O_3+HO$; by others as $C_4\ O_4+H$. According to the latter view the mellitic acid is a hydracid.

HOP, (*a*.) The hop is a genus of the class Monœcia XXI. and of the order Pentandria V. Its specific generic character consists of a male flower, calyx pentaphillous, or five-leaved, having no corolla, but anthers, with two pores at top. Female flower, calyx, an oblique entire scale of the Ament, or one large leaf; corolla none, but two styles, and one side within the calyx coated. The stalk is weak, and climbs spirally round the pole or support, ascending always from the right hand to the left, against the sun. The stalk and leaves are rough to the touch; upper leaves heart-shaped, lower ones divided into three lobes, serrated on the edges, and growing in pairs on long foot stalks opposite each other; the flowers in loose racemes; the male flower distinct, on branched peduncles; the female on peduncles, in hairs of the form of a strobilus or cone, composed of large imbricated calyces, containing one or two seeds. The scales of the strobilus are ovated, and of a yellow green. In botany there is but one description of hop, "*lupulus*;" but the planters divide it into different species, such as the golden, the Flemish, the red and white ruff, the white, the oval, and the long square garlic: these all differ in colour, shape of their bells, quantity and time of bearing, and ripening. The golden hop, from Farnham in Surrey, brings the highest price in the market; this may perhaps arise from the care with which they are picked there, hop by hop, without being mixed with leaves, &c.; while in Kent, and other counties, they strip them off more carelessly; and it is common to find the stalk and leaves mixed with the hops in the bags.

The hop has been cultivated from time immemorial in Europe on account of the useful properties of its flowers in the preservation of beer. The female blossom is the part used; and as the male and female flowers are on different plants, the female only is cultivated. It is no where cultivated in the East, and although it grows wild in different parts of Asia (a fact which may not be generally known), its flowers are no where in that quarter of the world applied to a useful purpose. The generic name of the plant *humulus*, is formed from *humus*, "fresh earth,"—the hop growing only in rich soils; and the specific name of the common hop, *lupulus*, is a contraction from *lupus salictarius*, the name by which it was, according to Pliny, formerly called, because it grew among the willows, which, by twining round and choking up, it proved as destructive as the wolf to a flock. It is rather curious that an allusion to the wolf is also contained in the ancient British name of the plant *llewig y blaidd*, or "bane of the wolf." The current name, *hop*, seems to proceed from the Anglo-Saxon *hoppan*, to climb.

Hops are first mentioned in the English Statute-Book in 1552, in the act 5 Edward VI. chap. 5, where lands "set with saffron or hops" are mentioned among other exceptions to the operation of the statute itself, which enacted that no such land should be kept in tillage as had been at any time in tillage since the first of Henry VIII. It does not appear, however, that the culture of hops proceeded very rapidly at first; for so late as the reign of queen Elizabeth they were fetched in considerable quantities from the Low Countries. But from an act of parliament in the year [illegible], it seems that hops were then cultivated in great abundance.

Hop-plantations require some years to come to perfection, and it is rarely considered advisable to take any produce from them the first year after they are formed, as by this means great damage is likely to be done to the future produce which they should afford. There are modes of planting, however, (as in Suffolk,) which render the practice of taking produce in the first season not injurious. Also when bedded or root sets have been used in planting, a small produce may safely be taken in the first season, as such plants are then as forward as those from cuttings in the second season.

The time of hop-gathering is a season of great animation and interest, and the motley groups that assemble to this labour are most amusing. The proper time for gathering the hops is indicated by their giving a strong scent, and the seeds becoming firm and of a brown colour. This usually happens early in September.

The stakes are pulled up with the plants still clinging to them; and are laid across a rough kind of *crib* or *bin* made of boards, and having four handles by which it may be carried. Boys and girls carefully pick off the heads of the flowers, and drop them into the crib, which is removed when it is full. The flowers are dried in a kiln as malt is, and are afterwards closely packed for preservation, in large sacks, called *bags* and *pockets*.

The produce of the hop is usually calculated by the amount of duty it affords to the revenue, which is charged at 18s. 8d. for every cwt. or 2d. per lb.; and each season realizes more or less than the preceding, according as the weather has been congenial, and the depredations of the *Hop-fly** have been extensive. Most of the hops are consumed in our own country, the quantity exported being comparatively trifling: taking the produce of the year 1833, which amounted to 32,747,301 lbs. we can convey some notion of its extent by showing that the quantity exported in the same year amounted only to 1,662,003 lbs.

The entire land in England and Wales applied to the cultivation of hops, in the year 1833, we learn from parliamentary documents, amounted to 49,187¼ acres, which is the sum of the following amounts in each excise district:—

District.	Acres.	District.	Acres.
Barnstaple (Devon)	8¼	Oxford	10
Bedford	2	Plymouth (Devon)	4
Bristol	4	Reading (Berks)	7½
Cambridge	4	Rochester (Kent)	12,566¼
Canterbury (Kent)	6,641¼	Sarum (Wilts)	1,018¾
Chester	¼	Salop	3
Cornwall	4¼	Stafford	¼
Derby	189	Staimbridge	702¼
Dorset	19	Suffolk	148¼
Essex	378¾	Surrey	13¼
Exeter (Devon)	19	Sussex	9,179¼
Gloucester	7½	Uxbridge (Middlesex)	7
Grantham (Lincoln)	29	Wales (East)	¾
Hants	1,386½	—— (Middle)	129
Hereford	12,071	—— (West)	¼
Isle of Wight	1	Wellington (Shropshire)	16
Lincoln	552¼	Worcester	2,087¾
Northampton	1¾		

Total Acres. . . 49,187¼.

The largest quantities of hops exported in 1833, were to Hamburgh, 875,193 lbs.; Havre, 126,360 lbs.; Calais, 122,752 lbs.; New South Wales and Van Dieman's Land, 93,821 lbs.; Elsinore, 58,559 lbs.; Rotterdam, 58,109 lbs.; Trieste, 56,824 lbs.; Ostend, 43,882 lbs.

The hop possesses many medical qualities, and is balsamic, aperient, and diuretic. In the spring time, while the bud is tender, the tops of the plant, cut off and boiled, are as good as asparagus, and are considered very beneficial; at that season the heads and tendrils are good to purify the blood in the scurvy, and most cutaneous diseases; decoctions of the flowers and syrups are of use against pestilential fever, and it is useful in hypochondria. A pillow stuffed with hops, and laid under the head, is said to promote sleep in fevers and delirium. It is also used by the dyer to die wool yellow, and from its stalks a strong cloth may be made. But the principal use of hops is in the preservation of malt liquor, which, by the addition of its strobile or bitter quality, is less apt to turn sour, more detergent, and more healthy. It is said to promote the vinous fermentation by its odoriferous principle, and, when infused or boiled with the wort, to increase its spirituous quality.

The counties which are most congenial to the growth of this plant are, Kent, Sussex, Surrey, Worcester, Hants, and Hereford, in which they flourish most abundantly. To the rural scenery of Kent, truly called the "Garden of England," the hopculture greatly contributes.

HOPE, Thomas, (*a.*) the author of "Anastasius," was a descendant from the Hopes (baronets) of Craig Hall, in the county of Fife. Early in life, possessing an ample fortune, he travelled over various parts of Europe, Asia, and Africa; and having with a refined taste, acquired a facility of drawing, he brought home a large collection of sketches, principally of architecture and sculpture. Soon after his return and settlement in London, he published "A Letter, addressed to F. Annesley, Esq., on a series of Designs for Downing college, Cambridge;" in which, founding his judgment on what he had seen and examined in the course of his travels, he criticised, with considerable severity, the series of plans, elevations, &c. which had been produced by Mr Wyatt. In consequence, as it has been said, of these criticisms, Mr Wyatt's designs were rejected; and Mr Wilkins was afterwards employed to commence the college. Having purchased a large house in Duchess street, Mr Hope devoted much time and study in finishing and fitting up the interior from his own drawings, and partly in imitation of the best specimens, both ancient and modern, in Italy. A description of this house will be found in the first volume of "The Public Buildings of London," by Britton and Pugin, accompanied by two plates representing the Flemish picture gallery, which was an addition made in 1820. A view of the old picture gallery, together with a catalogue of the pictures, was published in Westmacott's "Account of the British Galleries of Painting and Sculpture." His country mansion was at Deepdene, near Dorking; and thither he had removed a large number of his pictures, sculpture, and books, having built for their reception a new library, a gallery, and an amphitheatre to arrange and display antiques.

In 1805, Mr Hope published the drawings which he had made for his furniture, &c. in a folio volume, entitled "Household Furniture and Decorations." Notwithstanding the ridicule attempted to be cast on this work in the Edinburgh Review, it led the way to a complete revolution in the upholstery and interior decoration of houses. "To Mr Hope," says Mr Britton, in his volume entitled "The Union of Painting, Sculpture, and Architecture,"

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* This devouring insect makes its first appearance in the hop-garden in the spring, between the 10th and 30th day of May, usually about the 12th: and what is more remarkable, it generally appears on the same day in every hop district, however distant they may be from one another. At first it is in a winged state,—a solitary fly settling here and there on the under side of the young leaves. When the weather is warm, with mild rains during the last twenty days of May, these flies produce young ones, which are very small, and are called *deposit* or knits: with astonishing rapidity these knits become in a few days green *lice*—a larger form merely of the same animal. However, when the weather in May has been dry, cold, and windy, the *Hop-fly* has been frequently known to leave the plant and entirely disappear, even after remaining several days: while tarrying, it showed very evident signs of being hungry, continually crawling about on the upper as well as the under side of the leaves, and on its departure leaving no deposit whatever. As soon as the little creatures are born they plunge their tube-like mouths into the leaf of the hop, and begin with voracious eagerness to suck away the sap. In this position they remain quite stationary, but gradually increasing in size for about ten days; when each individual begins bringing forth young ones, which it continues to do at the rate of from eighteen to twenty-five per day all the remainder of its life.

The Hop-fly is characterized by a soft oval body, a small head, semi-circular eyes, antennæ of seven joints, longer than the body, and a beak which arises from the under part of the head, between the fore-legs, and descends almost perpendicularly. The wings, when developed, are four in number, and the legs are very long and slender, compelling them, in consequence, to walk awkwardly. After their torpid existence in the shape of cocoons, or, as some erroneously call them, eggs, during the winter, the return of genial weather in the spring brings them into active life.

"we are indebted, in an eminent degree, for the classical and appropriate style which now generally characterises our furniture and domestic utensils. Like most other innovations, his was described as whimsical and puerile by some persons—as if it were unbecoming a man of fortune to indulge in the elegant refinements which wealth placed at his command: whilst others caricatured the system, by cramming their apartments with mythological figures and conceits, jumbled together without propriety or meaning." Mr Hope was, in all respects, a munificent patron of art and of artists, and even of the humbler mechanic; for he has been known to traverse obscure alleys, lanes, and courts, to find out and employ men of skill and talent in their respective pursuits. Thorwaldsen, the Danish sculptor, was chiefly indebted to him for the early support and patronage which he experienced. By him the genius of young Chantrey was called into action, whilst the more mature talents of Flaxman were honourably employed. In 1809, he published "The Costume of the Ancients," in two volumes, royal 8vo.; in fixing the price of which, in order to promote its more extensive circulation, he at once sacrificed £1000 of the cost. The figures, which were chiefly selected from fictile vases (many of them in his own collection), are engraved in outline, and the greater part of them by that eminent master in that style, Mr H. Moses. Three years afterwards, he published his "Designs of Modern Costumes," in folio. These works evinced a profound research into the works of antiquity, and a familiarity with all that is graceful and elegant. His "Anastasius; or Memoirs of a Modern Greek," an historical and geographical romance in three volumes, which appeared in 1819, evinced at once the general knowledge, the fancy, and powers of the author. It presents a faithful picture of the customs, manners, and countries of the Turks and Greeks. Besides these productions, he contributed several papers to different periodical publications; and, at the time of his decease, was engaged in passing through the press a work "On the Origin and Prospects of Man." That work has since been published. Mr Hope died on the 3d Feb. 1831. He married in 1806, the youngest daughter of the archbishop of Tuam, and left three sons.

HORN, (*a.*) The various uses to which the horns of cattle are applied afford a curious example of the ingenuity and economy with which our arts are prosecuted. The horn consists of two parts: an outward horny case, and an inward conical-shaped substance, somewhat between hardened hair and bone. The first process consists in separating these two parts, by means of a blow against a block of wood. The horny outside is then cut into three portions, by means of a frame-saw. The lowest of these, next the root of the horn, after undergoing several processes, by which it is rendered flat, is made into combs. The middle of the horn, after being flattened by heat, and its transparency improved by oil, is split into thin layers, and forms a substitute for glass in lanterns of the commonest kind. The tip of the horn is used by the makers of knife-handles and of the tops of whips, and similar purposes. The interior, or core of the horn, is boiled down in water. A large quantity of fat rises to the surface: this is put aside, and sold to the makers of yellow soap. The liquid itself is used as a kind of glue, and is purchased by the cloth-dressers for stiffening. The bony substance, which remains behind, is ground down, and sold to the farmers for manure. Besides these various purposes to which the different parts of the horn are applied, the chippings which arise in comb-making are sold to the farmer for manure, at about one shilling a bushel. In the first year after they are spread over the soil, they have comparatively little effect; but during the next four or five, their efficiency is considerable. The shavings, which form the refuse of the lantern-maker, are of a much thinner texture. A few of them are cut into various figures, and painted and used as toys; for they curl up when placed in the palm of a warm hand. But the greater part of these shavings are sold also for manure, which, from their extremely thin and divided form, produces its full effect upon the first crop.

HORNER, Francis, an able parliamentary speaker, and one of the early writers in the Edinburgh Review, was born at Edinburgh on the 12th of August, 1778, and was the son of a respectable linen-draper in that capital. When sufficiently old, he was sent to the high-school of Edinburgh, where, with much praiseworthy diligence, he made himself a distinguished scholar among numerous contemporaries. From this place he proceeded to the university of that city, and under the auspices of the celebrated Dugald Stewart, he advanced highly in his studies, and among other acquaintances, became intimate with lord Henry Petty. This nobleman, in 1806, held the office of the chancellorship of the Exchequer, and through his interest the return of Horner to represent the borough of St Ives in the imperial parliament was secured. At the next election following, however, he lost his seat, and then betook himself to the profession of the law, and after due time was called to the bar. Subsequently, on the resignation of viscount Mahon, he supplied that nobleman's place, as member for Wendover; and immediately was nominated to the commission for investigating the claims upon the Nabob of Arcot. Arcot is a considerable district of Hindostan, forming part of the Carnatic; and for the many services done by the East India Company to the nabob and his son, the nabob, Azim-ul-Omrah, formerly ceded the whole district to the East India Company by treaty, in 1801: and on this occasion, the British government undertook to adjust the claims made by the creditors of the nabob, for whose satisfaction an annual revenue of 340,000 pagodas was set apart. Commissioners were, in consequence, appointed both in India and in London, for the investigation of the claims, and these boards have been in existence, and in operation, since 1806, endeavouring to unravel the mysteries in which the accounts were involved for fraudulent purposes. Out of a sum exceeding thirty millions sterling, claimed against the estate of the nabob, the commissioners set aside claims to the amount of upwards of twenty-seven millions on the grounds of fraud, and of that very common crime in India, forgery. Mr Horner was appointed one of these commissioners; and in 1810, likewise, he was chosen on the bullion committee, during which service he made a most elaborate, though unsuccessful effort for the return of cash payments. He supported alderman Combe's motion, to pass a vote of censure on ministers for having obstructed an address to his Majesty, from the lord mayor and corporation of the city of London; and on the regency question being discussed, proposed the appointment of a regent by address, rather than by bill, because, as he contended, by the latter mode parliament would usurp the legislative power of the crown, and by a gross and illegal fiction, steal the semblance of an assent, where there could be no negative. During the debate in 1812, relative to the two tellerships of the exchequer, he made seven distinct motions on the subject, with a view to confine those sinecures to fixed annual sums, all of which were however negatived. Thus did Mr Horner most indefatigably devote himself to the public business of his country, till at length over earnestness, and too great application, broke down his constitution. In this unfortunate exigence, his medical advisers urged him to retire from public life, and try to amend his health by a change of climate. He accordingly visited France, and proceeded onwards to Italy; but his disease gained upon his strength; and while at Pisa, he was completely overcome, and died. This event happened in February, 1817, when he had only reached thirty-eight years of age. A monument was erected to his memory in Westminster Abbey.

HORSBURGH, James, F.R.S., a distinguished hydrographer, was born on the 23d September, 1762, at Elie, in the county of Fife, in Scotland. His parents, though in a humble sphere of life, were pious and respectable. At the age of sixteen, having acquired the elements of mathematical science, book-keeping, and the theoretical parts of navigation, with a view to a sea-faring life (to which the maritime position of his native place, on the Frith of Forth, probably invited him), he sailed in various vessels, chiefly in the coal trade, from Newcastle and the Frith of Forth, to Hamburgh, Holland, and Ostend. In May, 1780, he was captured by a French ship of twenty guns, close to Walcheren, and detained in prison at Dunkirk for a short time. After his liberation, he made a voyage to the West Indies, and, on his return, proceeded to Calcutta. In 1784, he was made third mate of the Nancy, bound for Bombay. He continued in this trade for about two years; and in May, 1786, when proceeding from Batavia towards Ceylon, as first mate of the Atlas, he was wrecked upon the island of Diego Garcia, owing to the incorrectness of the charts then in use. This circumstance taught him the advantage of making and recording nautical observations. On his return to Bombay, he joined, as third mate, the Gunjava, a large ship belonging to a respectable native merchant, and bound to China. On the vessel's arrival in China he became first mate, and in that capacity he continued to sail backwards and forwards, in that and other ships, between China, Bombay, and Calcutta, for several years. His experience and observation had now not merely furnished him with a large share of practical skill, but enabled him to accumulate a vast store of nautical knowledge, bearing especially on Eastern hydrography. By the study of books and by experiments, he familiarised himself with lunar observations, the use of chronometers, &c., and taught himself drawing, etching, and spheres, devoting his time, when in port, often till midnight, to these studies. During two voyages to China, by the eastern route, he constructed three charts, one of the Strait of Macassar, another of the west side of the Philippine Islands, the third of the tract from Dampier Strait, through Pitt's Passage, towards Batavia, accompanied by a memoir of sailing directions, which were published under the patronage of the East India court of directors, for the use of their ships.

He finally returned to England in 1805, and soon after published a variety of charts,* with "Memoirs" of his voyages, to accompany them, explanatory of Indian navigation. Several of his papers, which he presented to Sir Joseph Banks, were published in the Philosophical Transactions for 1810, particularly some remarks on luminous animals; and some are published in Nicholson's Philosophical Journal, vols. 13, 14, and 15.

In 1809 he published "Directions for Sailing to and from the East Indies, China, New Holland, the Cape of Good Hope, and the interjacent ports." This invaluable work, which is now a standard authority, was compiled chiefly from original journals and observations made in the oriental seas, during twenty-one years. Its great utility and accuracy have been attested by the most competent witnesses in all parts of the world; and the author was almost a slave to it, devoting all his attention to correcting, revising, and enlarging it. He had just completed a new edition of this work prior to his death, all but the index. In 1810, on the death of Mr Dalrymple, he was appointed by the court of directors, hydrographer to the East India Company. From this time, all his energies were dedicated to the important duties of his office; and to the construction of a variety of valuable charts and works; amongst these are, an Atmospherical Register, for indicating storms at sea (1816); a new edition of "Mackenzie's Treatise on Marine Surveying (1819)," and the "East India Pilot." He also produced a paper, which was read before the royal society, on the Icebergs in the southern hemisphere, which is printed in the Philosophical Transactions for 1830.† His last work was a Chart of the East Coast of China (1835), a very curious and interesting one, from having the names in the Chinese character and in English, translated by himself.

Mr Horsburgh died on the 14th May, 1836. He was married in 1805, and left one son and two daughters. He was a man of modest and unobtrusive character; of the most benevolent disposition, and the strictest probity. He was devoted to those branches of science which belonged to his profession. To be useful to his fellow creatures seems to have been the impulse of all his labours; and the number of lives and the amount of property he has been the means of preserving is incalculable. A striking public acknowledgment of his merit is contained in the report of the select committee of the House of Commons, on shipwrecks, which refers to the highly valuable labours of the East India Company's maritime officers, and "the zealous perseverance and ability of their distinguished hydrographer, the late captain Horsburgh, whose directory and charts of the eastern seas have been invaluable safeguards to life and property in those regions."

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* A chart of the China Sea; a chart of the Straits of Malacca; a chart of the entrance of Singapore Strait: a chart of Bombay Harbour. He afterwards published a chart from lat. 38° S. to the equator, comprising the Cape of Good Hope, the east coast of Africa, the Madagascar, Archipelago, &c.; a chart of the Peninsula of Hindostan, the Chagos, Maldiva, and Lacca Diva Archipelagos. and Ceylon, and a small chart of the islands and channels between Lucconia and Formosa.

† In examining the journals of the East India Company for the whole of the previous century, captain Horsburgh found no account of icebergs seen in the southern hemisphere, though the vessels had proceeded into the parallels 40°, 41°, and 42° south; while, during the two years previous to 1830, icebergs had occasionally been met with by several vessels very near the Cape of Good Hope, between lat. 36° and 39°. The most remarkable instance adduced by captain Horsburgh is that in which the brig Eliza fell in with five icebergs, in 1828, lat. 37° 31′ S., lon. 18° 17′ E. of London. They were enormous masses of ice, from 250 to 300 feet high, of the shape of church steeples. He attributes their appearance to the existence of a large tract of land near the Antarctic circle, somewhere between the meridian of London and 20° east longitude: and their unprecedented descent during the two years in question, to their disruption from the place of their formation by the violent convulsion of an earthquake or volcano. He states it as a remarkable fact, that icebergs are met with at the same period of the year, April and May, whether in the northern or southern hemisphere, although the seasons are then, in each hemisphere, of an opposite character.

In person, Mr Horsburgh was of the middle size, athletic and well-proportioned; his complexion dark, his countenance mild, intelligent, and prepossessing; his manners were simple and unassuming.

HOWDEN; a market-town and parish in Howdenshire wapentake, in the East Riding of Yorkshire, twenty-one miles from York, and 180 from London. Population in 1831, 4533. The horse fair which is held here is one of the most celebrated in the kingdom, and is numerously attended. The steam-boats which pass and repass Howden many times a day, between Hull and Selby, offer convenient means of communication with Howden. Selby, which is only ten miles distant, places Leeds and the busy district around it in close contact with Howden. The steam-boats to Thorne render the communication with Sheffield nearly as rapid; and from Goole, which is so short a distance from Howden, there are steam-boats to Hamburgh, London, and Yarmouth.

The *wapentake of Howdenshire*, is bounded on the south by the river Ouse; but as the Trent joins that river nearly opposite the eastern limits of Howdenshire, the Humber forms its south-eastern boundary line. A very small part of Howdenshire is west of the river Derwent, and there are two small portions which are altogether detached, and are situated east of the wapentake, on the banks of the Humber. The population of the whole wapentake was 8,246 at the last census. The country is flat, and was formerly subject to frequent inundations.

The manor and *church of Howden*, or Hoveden, as it was anciently called, originally belonged to the abbey of Peterborough; but previous to the conquest, they had been wrested from that monastery, on account of its inability to pay the tax called *dane-gelt*, which was levied with such rigour, that those who failed in raising the required contribution forfeited their lands. This church and manor were in possession of the crown at the period of the conquest, and were given by the Norman monarch to the bishop of Durham, who obtained a confirmation of the grant from pope Gregory VII. The bishop vested the church in the monks of Durham, but retained the manor. Thus the prior and convent of Durham obtained ecclesiastical jurisdiction in Howdenshire. The collegiate church of Howden was dissolved in the first year of Edward VI., and the temporalities thereby became invested in the crown. Thus they remained till 1582, when queen Elizabeth granted them by letters patent to Edward Frost and John Walker, their heirs and assigns for ever. The tithes are now in the hands of several impropriators. Towards the close of the sixteenth century, the church of Howden fell into decay. The choir becoming altogether unsafe, the parishioners, in 1634 and 1636, fitted up the nave for the celebration of public worship. In 1696 the groined roof fell in, and from that time the east end has been but a venerable memorial of its former magnificence. The church is built in the form of a cross, with a square tower, 135 feet in height. The chapter house was formerly the most celebrated portion of the edifice. It was built in the thirteenth century, and contained thirty stalls, each under a gothic arch, separated by clustered pilasters, very small, and of delicate form, having foliated capitals of pierced work, from which rich tabernacle work rose, and formed a canopy for each stall. The tower of the chapter-house fell in 1750. The whole length of the church, including the ruins, is 255 feet, and the breadth sixty-six feet. The length of the choir is 120 feet, and of the nave 105 feet, and the breadth of each is sixty-six feet. Nearly close to the church the bishops of Durham had an ancient palace, which was their frequent summer residence. A park extended from it to the Ouse, distant about a mile. The ruins of this ancient edifice have been occupied as a farm-house.

HOWE, James; an eminent painter of animals, was born in the parish of Skirling, in the county of Peebles, Scotland, on the 30th August, 1780. His father was minister of the parish, but being in humble circumstances, James received only such elementary instruction as the parish school could supply, and having early displayed a taste for drawing, he was sent, at the age of thirteen, to Edinburgh, in order that he might learn the trade of house-painting. Even when an apprentice, he became known for his peculiar talent, and, among other jobs, was employed, during his spare hours, to paint for Marshall's panoramic exhibitions, at the rate of five-shillings an hour. On the expiration of his apprenticeship he commenced business on his own account as animal painter, in Greenside street, where he attracted the notice of various persons of distinction, and among others, the earl of Buchan, by whom he was induced to pay a visit to London, with the view of taking portraits of some horses in the royal stud, and of thus securing the highest patronage in the realm. Howe accordingly painted likenesses of some of these in his very best style, but it unfortunately happened that George III. was at this period seized with blindness, and could not appreciate the painter's power. Howe was in consequence obliged to retûrn to Scotland, and threw himself on his old patrons. For a number of years, Howe continued to hold the rank of the first animal-painter in Scotland, if not in Britain. His cattle-portraits and pieces found their way into the houses of many of the nobility and gentry of the country. Some little time subsequent to 1810, Sir John Sinclair gave him a commission to travel through various parts of Scotland, for the purpose of painting the different breeds of cattle to be found in the country. A series of valuable pictures was the result of this journey, most of which are still in the possession of Sir John's family. The faithfulness of these delineations rendered them of much use to Sir John in the composition of his agricultural works. Various of Howe's paintings of this date were engraved, and it was in this form that the public chiefly became acquainted with them. One piece, for example, engraved by the famous artist Turner, still keeps possession of the print-shops. It represents a Hawking Party, and contains figures of men and horses, as well as of hawks. The most striking feature of this and the works previously mentioned, was the character which Howe threw in-his delineations of animals. Every individual animal in his pieces, even though the group might be numerous, was seized and represented in some attitude or movement, characteristic of the race, or of the breed—for even *breeds* are distinguished from one another by such peculiarities. In this lay his great art and merit; and hence the fidelity of his paintings is always to be recognised at a glance; for, though few people, perhaps, could describe any creature's characteristic attitudes, if asked to do so, almost every one can distinguish the verisimilitude of such peculiarities, when set before him by the pencil. However, having once succeeded in giving *character* of this kind to his representations of animals, he was too apt to rest contented there, and to neglect or slur over the *finishing*.

After the battle of Waterloo, Howe was induced to visit the scene of action, and returning home, he completed a large panoramic view of the contest, in one month, although he had four thousand feet of canvas to cover with men and horses. The panorama was highly successful both in Edinburgh and Glasgow, drawing for a long period thirty pounds a-night, half of which fell to the painter's share. Howe resided about two years in Glasgow at this period, in circumstances which were always fatal to his best interests. He was idle, had plenty of money, and was greatly deficient of that useful element of character, usually termed *steadiness*. The consequence was, that he became a dupe to all who chose to prey upon his simplicity, and indulged in a continued round of dissipation. At the close of the term mentioned, he returned to Edinburgh, sunk in spirits, injured in constitution, and without a penny in his purse.

Fortunately at this time he was invited by the Hon. Mr Maule to Brechin castle, to paint some pieces there. The invitation was accepted, happily for the artist, because the quiet of a country residence partly restored the health that had been dissipated. After a stay of four months, during which time he adorned the walls of Brechin castle with various proofs of his genius, Howe returned to Edinburgh master of several hundred pounds, which he lodged in one of the banks—the first money of his so placed. He now began to work diligently, and to show something like a firm resolution to avoid his late errors; but his better genius did not long retain the ascendancy, and before the close of 1821, he was under the necessity of removing his lodgings to Newhaven, in the hope that the change of air might benefit his again weakened frame, as well as that the seclusion of the place might be productive otherwise of good. He resided here with a respectable private family, and was soon able to resume his professional avocations. A number of large compositions, many hundred sketches of an unique character, and countless portraits of single animals, were produced by him during the next few years, being executed partly at the request of employers, and partly at the instigation of his own fancy. His wonderful skill in depicting animals remained undiminished by time, though he grew always more and more careless as to the proper completion of his pieces. So universally admitted were his powers, hat the most celebrated artists of the day not unfrequently made use of his talents in filling in cattle nto their best productions. During the years which e spent at Newhaven, he entered on a task which, completed, would have proved a lasting benefit his country, as well as a durable memorial of his own genius. This was a work on British Domestic Animals, of which Howe was the painter, and Lizars the engraver. Several numbers were published, containing pictures of cattle of various kinds and breeds, besides horses, cows, sheep, &c. Unfortunately, the work did not succeed, and was accordingly abandoned. The latter years of Howe's life were spent in Edinburgh. In 1834, he took up his residence with an old pupil of his own, Mr Robertson, with whom he remained till the period immediately preceding his death, which event took place on the 11th July, 1836.

HUME, David, baron of the exchequer in Scotland, and nephew of the illustrious historian, was born in 1756, and died at his house, Moray Place, Edinburgh, Aug. 30, 1838. He filled various important situations with great ability, having been successively sheriff of Berwickshire and of West Lothian, professor of Scotch law in the university of Edinburgh, and one of the barons of exchequer, which latter office he held till the abolition of the court in 1830. But his most important service, and that which will render his name coeval with the criminal jurisprudence of his country, is his great work on the Criminal Law of Scotland, which has long been considered as the text-book in that department of jurisprudence, and is constantly referred to as authority both by the bench and the bar. It was published in two vols. quarto, under the title of "Commentaries on the Law of Scotland, respecting the description and punishment of Crimes." Baron Hume left in the hands of the secretary of the royal society of Edinburgh, a valuable collection of MSS. and letters belonging or relating to his celebrated uncle.

HUNT, Henry, late M. P. for Preston; a well-known popular orator among the early radicals, was born at Widdington Farm, in the parish of Uphaven, Wiltshire. For many years he regularly attended Devizes Market, seldom, if ever, missing a market day. After his father's death he was elected chairman of the table in the principal dining-room of the farmers at the Bear inn; the daughter of the landlord of which inn, Miss Halcomb, he married. Though fond of pleasure, no man attended more strictly to his farming business, and the farms of no man in the kingdom were managed better, or were in higher condition. He had also the best flock of Southdown sheep in the county, the wool of which sold for the very highest prices. In the year 1801, when the apprehension of an invasion was so great that the lord lieutenant of the county caused letters to be written to the churchwardens, requiring from every parish a return of all movable property, live and dead stock, &c., in Mr Hunt's schedule were enumerated—wheat, 1,600 sacks; barley, 1,500 quarters; oats, 400 quarters; hay, 250 tons; cart horses, 30, value from 30 to 70 guineas each; working oxen, 10; cows, 20; sheep, 4,200, &c.; altogether valued at upwards of £20,000.; the whole of which he voluntarily tendered to the government, to be at their disposal in case of an invasion. He also engaged to enter himself and three servants, completely equipped, and mounted upon valuable hunters, as volunteers, into the regiment of horse that should make the first charge upon the enemy. This liberal and patriotic offer was talked of all over the country, and he received the thanks of the lord lieutenant. The years 1801 and 1802 may be said to have been the zenith of the farmer's glory: wheat being at this time £4 a sack. Although Hunt generally drove four-in-hand to Devizes market, he was able to do a day's work with any labourer in the county; and several anecdotes are related of the "labours" of this modern Hercules.

Hunt was a member of the yeomanry cavalry; but in consequence of some misunderstanding he received a letter from lord Bruce, saying, "that his services were no longer required in the Marlborough troop, and requesting that he would return his sword and pistols, by the bearer." Hunt went to lord Bruce, and demanded satisfaction. For this offence he was indicted in the court of King's bench, found guilty, and sentenced to pay a fine of £100 and to be imprisoned for six weeks. In prison he met with Waddington and some other Radicals, to which may be attributed his subsequent political sentiments. It was in Bristol, where he was following the trade of a brewer, that he made his debut as a candidate for parliamentary honours. In June 1812, a vacancy having occurred in the representation of that town, the candidates proposed were, R. H. Davis, Esq., Mr Hunt, and Mr Cobbett. The poll was kept open for fourteen days, at an enormous expense to Mr Davis. Serious riots took place, and the city was for a time at the mercy of a lawless mob. The numbers polled were, for Mr Davis, 2142, Mr Hunt, 235, Mr Cobbett, 0. Parliament being dissolved in the following October, Mr Hunt again offered himself in opposition to Mr Davis, Mr Protheroe, and Sir Samuel Romilly; and he was again beaten by a large majority, Mr Davis and Mr Protheroe being the members returned. Hunt twice contested the county of Somerset without success, and also made several fruitless attempts to interest the electors of Westminster in his favour. Although as a mob orator his popularity was unrivalled, and his out-door triumphs were hailed by assembled thousands, as at Manchester and Spa Fields, yet he had perhaps no serious hope of ever becoming a British senator. At length, however, during the excitement of the Reform Bill in 1830, he defeated lord Stanley at Preston, and entered the House of Commons, where, like other noisy demagogues, he soon found his level, and became harmless and insignificant, except in his votes. In personal appearance he was perhaps one of the finest men in the House: tall, muscular, with a healthful sun-tinged florid complexion, and a manly deportment—half yeoman, half sportsman. To a close observer, however, his features were wanting in energy of will and fixedness of purpose; the brow was weak, the eyes were glittering and restless, and the mouth was usually garnished with a cold simper, not altogether accordant with that heart-born enthusiasm which precludes all doubt of sincerity. If to this defect we add, that he was a man of very imperfect education, possessing but little information, and that all on one side, on the subjects he talked most about, and that readiness was the chief characteristic of his understanding, it will not be judging uncharitably to say, that a restless thirst of excitement, great personal vanity, and the accident of circumstances, and not native force of intellect, achieved for him his "Radical notoriety." He was re-elected in 1831; but in the following year the Derby interest resumed its sway at Preston. He died on the 13th Feb. 1835, aged sixty-two.

HUNTINGDON; the county town of Huntingdonshire, is situated on a rising ground to the north of the river Ouse, fifty-eight miles N. by W. from London. It was called in Saxon, Huntingdun, or Hunters' down, from the nature of the surrounding country, as adapted for the chase. It was a place of some importance in the reign of Edward the Elder, who is said to have erected a castle here, in 917, which was enlarged and strengthened with new buildings and ramparts, by David, king of Scotland, and earl of Huntingdon, in the reign of Stephen; but was afterwards demolished by order of Henry II. At the period of the Norman Conquest, here was a mint, for coinage, and Matilda, the wife of William I., founded a monastery at this place, which must have been anciently much more extensive than it is at present, as there were fifteen churches, which in Camden's time were reduced to four, and at present there are only two. The town consists principally of one street, extending north westward from the banks of the Ouse, about a mile in length. The brewing-trade is carried on here, and the principal commerce is in corn, flour and malt. The borough comprises the parishes of All Saints, St Benedict, St John the Baptist, and St Mary, all in the diocese of Lincoln. Oliver Cromwell was born in the parish of St John the Baptist, April 25, 1599. Population of Huntingdon in 1831, [illegible]

HUNTINGDONSHIRE; an inland county of England, twenty-four miles in length, eighteen in breadth, and sixty-seven in circumference. It is almost surrounded by the counties of Cambridge and Northampton. It is included in the diocese of Lincoln and province of Canterbury. Its chief rivers are the Ouse and the Nen. The Ouse rises at Brackley, in Northamptonshire, and enters this county at St Neots; the Nen has its source near Daventry, flows by Oundle, and fills the several Meres. Huntingdonshire is divided into four hundreds, in which are six market-towns, namely, Huntingdon, St Ives, Kimbolton, Ramsey, St Neots, and Yaxley. The air is generally good, except the fenny tracts, which are frequently subject to unwholesome damps. The chief products are corn, fine horned cattle, and a very rich and delicate kind of cheese, which is made in the neighbourhood of Stilton, where it is usually sold, hence it is called Stilton cheese. Huntingdonshire, for the most part, is a farming county, and produces no manufacture worthy of notice.

When the Normans became masters of England, William the Conqueror, in 1068, gave the earldom of this county to Waltheof, a noble Saxon, on whom he also bestowed the hand of his niece, Judith; but that lady betrayed her husband, who was executed for a treasonable conspiracy against the government. David, prince of Scotland, having married the heiress of Waltheof, was made earl of Huntingdon in 1108, and the honour continued in his family till 1219. Almost the whole county is said to have been forest land till the reign of Henry II.; but it is now open and well cultivated. Population of the county in [illegible], 37,568; in 1831, 53,100. Population of the chief towns of the county: Huntingdon, [illegible]; St Ives, 3,314; St Neots, 2,617; Kimbolton, [illegible]; Ramsey, and parish, 3,006; Yaxley, [illegible].

HUNTINGFORD, George Isaac, lord bishop of Hereford, and Warden of Winchester college, was born at Winchester, September [illegible], [illegible]. He was admitted on the foundation at Winchester college in 1762; and, in 1768, was elected to New college, Oxford; where he attained the degree of M.A. in 1776. In 1772, on the death of his [illegible] ther, the Rev. Thomas Huntingford, he succeeded him in the mastership of Warminster school; and continued there for some years. In 1781, he first confided himself to the press, in a private edition of fifty copies of some Greek monostrophic odes. These compositions, not only exhibited his knowledge of the beautiful language in which they are written, but ranked him high as a man of poetical genius. In the following year they were printed by Mr Nichols, at the expense of Mr Burdon, the bookseller at Winchester. They were reviewed in the Monthly Review, by Dr Charles Burney; who, with some warm and well-deserved compliments, combined a series of elaborate remarks on some supposed lapses of correctness, which were afterwards defended in an "Apology" annexed to a second collection, published in 1784. A "Translation of Huntingford's First Collection of Monostrophics," by the Rev. P. Smyth, was printed in 1785. In 1782, Mr Huntingford published the first part of his "Introduction to the Writing of Greek, after the manner of Clarke's Introduction to Latin." This work has been adopted in the higher forms of almost all the classical schools in the kingdom. The second part, consisting of select sentences from Xenophon, is now united to it. He also published, in 1788, "Ethic Sentences, by writing of which Boys may become accustomed to the Greek Characters." Another classical work was a Latin interpretation of Ælian. In 1785, he was chosen a Fellow of Winchester college. In 1789, he published a sermon preached in the cathedral church of Salisbury, at the triennial visitation of the lord bishop. In the same year he was appointed Warden of Winchester college; and in 1793, he accumulated the degrees of B. and D.D. In the latter year he published a sermon preached before the House of Commons; in 1795 and 1797, two volumes, each containing twelve discourses; and in the last-named year, also, a discourse preached before the Hampshire Fawley volunteers. In 1800, he published "A Call for Union with the Established Church, addressed to English Protestants; being a Compilation of Passages from various Authors" (reprinted in 1808). It was dedicated to Mr Speaker Addington, who had been his pupil at Winchester; and who, after becoming prime minister, in the following year, advanced him to the bishopric of Gloucester. From Gloucester, Dr Huntingford, after he had previously declined translation, was, in 1815, promoted to the See of Hereford. His publications, whilst on the bench, were almost entirely professional: their titles are as follows:—"A Sermon for the Royal Humane Society, at St James's," 1803, 8vo.; "Thoughts on the Trinity," 1804, 8vo.; "A Sermon before the House of Lords," May 25, 1804, 4to.; "A Sermon at St Martin's-in-the-Fields, before the Governors of the Benevolent Institution for delivering poor Married Women," March 9, 1806, 4to.; "Preparation for the Holy Order of Deacons, or the first Question proposed to Candidates for the Holy Order of Deacons elucidated, a Charge," 1807; "Preparation for the Holy Order of Priests, or the Words of Ordination and Absolution explained, a Charge," 1809; "The Petition of the English Roman Catholics considered, in a Charge delivered at his Triennial Visitation in 1810;" "A Protestant Letter, addressed to the Right Hon. Lord Somers," 1813, 8vo. The bishop died, unmarried, on the 29th April, 1832, leaving high character as a scholar and a man of worth.

HYDRATE; a term used in chemistry to designate a definite compound of water. Thus, caustic potash is composed of dry potash KO, and water HO, and is called the hydrate of potash. Slaked lime is a compound of lime with water, a hydrate of lime. Oil of vitriol is a hydrate of sulphuric acid, or a compound of the dry acid with water. Alcohol is a hydrate of ether, &c., &c. Many metallic oxides, when precipitated, combine with water, and form solid hydrates. Peroxide of iron and alumina, for example, when precipitated, contain twenty-five or twenty-six equivalents of water for one of the dry oxide.

HYDRIODIC ACID; a powerful acid gas, composed of iodine and hydrogen. It is very analogous to hydrochloric or muriatic acid gas, from which it is distinguished by containing iodine instead of chlorine.

HYDROBROMIC ACID; an acid gas analogous to the preceding, and to the following; composed of bromine and hydrogen.

HYDROCHLORIC ACID; the systematic name of the acid, long known as muriatic acid, or spirit of salt. It is composed of chlorine and hydrogen, and is the type of the class of hydracids. When these acids are placed in contact with metallic oxides, they do not combine with them, but mutual decomposition occurs, the hydrogen of the acid uniting with the oxygen of the oxide to form water, while the metal combines with the radical of the acid to form a salt. Thus, when hydrochloric acid, (Cl H) acts in oxide of silver (Ag O) there are formed water (HO) and chloride of silver, (Ag Cl). See *Muriatic Acid.*

HYDROCYANIC ACID; a hydracid, composed of cyanogen and hydrogen. It has long been known as prussic acid. It is a most virulent poison, acting, in a full dose, with greater rapidity than any other poison known to physiologists. Of the pure acid one or two drops will cause death in a few seconds, if introduced into the mouth of a large animal. When a dose insufficient to cause instant death has been administered, the proper antidotes are ammonia, chlorine, and the cold affusion, which sometimes prove effectual after life appears extinct. See *Prussic Acid.*

HYOSCYAMINE; a vegetable alkali, extracted from the hyoscyamus niger, or henbane, by Geiger and Hesse. It is liquid, volatile, has a strong narcotic odour, like oil of tobacco, dilates the pupil powerfully, and is a virulent narcotic poison.

HYPOCHONDRIASIS AND HYSTERIA, (*a.*) Among the parts of medical study which would seem particularly to recommend themselves to general readers, we should be disposed to place that melancholy malady to which physicians give the name of *hypochondriasis;* and that changeful disorder which vexes the female constitution, and baffles the medical practitioner, under the comprehensive appellation of *hysteria.* Both these affections, whilst they grievously disturb the body, either take their origin, or derive aggravation from, or induce, in different examples, great disturbance or impairment of mind; insomuch that the most zealous writer of prescriptions can hardly promise deliverance from either disease, unaided by some general mental regimen. Although the identity of these diseases has been maintained by many authors, there is not only, in the symptoms, the causes, and the treatment of the maladies, little like an approach to identity, but there actually appears to be no kind of resemblance. In the symptoms of the two disorders especially, there is little or nothing in common. Hysterical patients may indeed be hypochondrical, and hypochondriacs may be hysterical; but the mobility, the superexcitability of the hysteric constitution is still broadly distinguished from the dull mono-maniacal fancies of the hypochondrical temperament. Hysteria seldom appears in men; hypochondriasis much more frequently in men than in women. Hysteria is a disease of the weak, the restless, the excitable; hypochondriasis, of the sedate and contemplative. Hysteria is often linked with inordinate passions, and fostered by luxury; hypochondriasis assails those whose minds, after being severely bent to one pursuit, are allowed to fall into relaxation and comparative indolence. Whatever exalts the sensibility, as poetry, music, the fine arts, may dispose to hysteria; but in many of these things the harassed hypochondriac finds temporary relief. Hypochondriasis affects the retired man of business, the disbanded soldier, the sailor paid off; hysteria affects young females, commonly in the prime of life, and whose profoundest application is to the perusal of the newest romance.

A comfortable looking gentleman, of easy fortune, whose house, whose equipage, whose dinners, whose general condition, seem calculated to excite the envy of his toiling neighbours, begins, about the age of forty-five, or fifty, to lose his cheerfulness, to forego his customary exercises, to make his diet a subject of careful study, to regard with especial dislike any wind that approaches within a few points of the east, and to clothe himself in superabundant raiment. His conversation has undergone a change. From discourse relating to the sports of the field, or grave discussions of the corn laws and currency question, he perpetually deviates to the subject of his own health. He eats well three times a day, but complains of loss of appetite. He looks smooth and ruddy, but tells you that he loses flesh daily. His countenance assumes a melancholy cast, and all his meditations tend towards the subject of his digestive organs. He acquires an unhappy habit of feeling his own pulse, and he often walks to the looking-glass to inspect his tongue. He is very particular in the matter of his excretions, keeps a journal of his symptoms and feelings, and weighs himself once a week. There is nothing of which he is more convinced than that by his sensations he can trace his food through all the curves of his bowels down to one particular point, where he strongly suspects the intestinal canal ends in something very much like a *cul-de-sac.* If this unfortunate gentleman is blest with an apothecary largely endowed with the gift of listening to him the patient unfolds a tale of sufferings various and distressing: all his sensations, perverted from their proper ends, seem to have become the instruments of annoyance. All the powers of language are employed to describe the various perplexities which wait upon the functions of digestion and assimilation; the stomach has no capacity for suffering which is not called into activity; it is craving or vexed with nausea; it is distended, overloaded, aching, gnawing, burning, and drawn up with spasms; whilst the sympathetic intestines are seized with sudden pains and indescribable griefs, which lead the sufferer at length to believe that every viscus in his body is turned upside down. Every particular connected with the supposed history of his case seems to him worth preserving. It may be that the alterative pills of the excellent apothecary, and his infallible black draught, fail to give relief. But kind friends and neighbours, overflowing with compassion, fill the house with medicines of their own recommendation, and which are spoken very highly of in advertisements. Some of these are rather violent, and bring the patient to so faint a condition that he passes quickly to the other stages of a disorder which is now advanced to a very promising hypochondriasis. The patient then, perhaps, experiences a division of his pains, without much diminution of them. No longer concentrated on the first passages, they are dispersed over the whole economy. Wherever, in the universal frame of his body, there is a nerve or a blood-vessel, there is there also some uneasy irregularity. His head alone is affected with as many maladies as would fill a hospital. Flashes of light affect his eyes; the sound of waters is in his ears; stabs of pain affect his temples; invisible bonds bind his aching brow, upon the vertex sits a load heavier than that carried by the strongest porter; the foot of a giant presses on his neck and shoulders. In these sensations there is frequent variety, but rare relief. All at once loud bells ring within the chambers of the inner ear; or the sound of artillery, or voices as of a multitude, break in upon the silence of the hypochondriac's parlour. Then his eyes become fantastically affected; the landscape is enveloped in smoke; the columns of the morning paper move *en echellon;* the patient is quite convinced that he is growing blind. It is incredible how much he suffers from the noise of children; the servants shut the doors with a violence that distracts him, and all his friends have acquired an unaccountable trick of talking loud.

In all this, although its detail conveys even to the most compassionate hearer an idea of fancy and exaggeration, there is much real and pitiable suffering. Yet this is but a part of the woes of a hypochondriac. His very heart does not beat as it used to beat: it throbs, and jumps, and flutters, and sometimes seems to come to a complete stand-still. When he lies on his left side, it bounds against his ribs as if it would come out of his thorax; and when he turns for relief to his right, the heart turns too, and keeps up the same disturbance. Then every particle of his skin has acquired an intensity of feeling; a current of air, an open door, torments him; the halo of fresh atmosphere which comes into his close room with friends who have been riding or walking out of doors feels raw and irritating to his organs of respiration, and chills his blood. Easy chair, or comfortable sofa, he can find none. He loads himself with under-waistcoats of all denominations, and in numbers without number. He cannot always open his mouth with impunity, for the fog penetrates to his stomach and refrigerates the vital organs, so that he does not recover it for the whole day.

The mind, which has not been quite free from impairment from the first, now becomes more gravely affected. Reading and all mental occupations become irksome; every view of the past is tinctured with sadness; the future prospect is without hope; and the fear of death is for ever impending.

> "The sun grows pale;
> A mournful visionary light o'erspreads
> The cheerful face of nature: earth becomes
> A dreary desert, and heaven frowns above."

Strange fancies introduce themselves among the sufferer's thoughts. Sometimes he supposes himself to be expanded like a balloon, and his [illegible] gravity diminished, so that he dreads an involuntary ascent to the stars. Or his solid bulk is imagined to be so enlarged that it perplexes him to think how he shall get through the door. Certain untrue sensations in the lower limbs persuade him that they are made of glass; or his perceptions are so compressed that he conceives himself to be a piece of money. He often thinks himself dying, and is occasionally satisfied that he is dead.

Such is the disorder which medical writers call hypochondriasis. It happens, oddly enough, that the very errors of the faculty not unfrequently produce a great deal of comfort to persons labouring under this disorder. Well persuaded themselves that they labour under many grievous diseases, of which some one is the chief, they are never so happy as when they meet with a medical practitioner who, either in his innocence or artfully, fixes boldly on some *organ* as the fountain and origin of all the patient's symptoms. The patient tells his friends, with the air of a man comfortably relieved from every doubt, that his new doctor has found out his complaint, and that he has got a disease of the mesenteric glands, or a scirrhus of the bowels, or a softening of the brain. He now knows what he is about, and can pursue a regular plan; which he does until he removes to some other fashionable resort of the sick,—calls in another doctor, and finds out they were quite mistaken at Bath and Cheltenham, and that he labours under some other malady, but quite as incurable. In the mean time, the worst part of the case is, that there is probably some real disorder at the bottom of all these complaints, and which requires for its detection and management a rarer sagacity and a more skilful application of medicine than is to be expected from those who are the readiest to prey upon the weakness and credulity of hypochondriac patients.

By writers in general, hypochondriasis has been considered as particularly common in England. Admitting the fact, its explanation is not, we apprehend, to be sought solely in our variable climate. The frequent gloominess of our sky, which has been accused of "disposing all hearts to sadness," is more than compensated for by its enlivening mutability; and those who, ungrateful for the gorgeous springs, the cool refreshing autumns, and summers not intolerable, of our climate, have sung the praises of warmer regions and a cloudless sky, have in most instances had no opportunity of making a comparison between the climate of England and that of the over-rated South of Europe. Certainly, hypochondriac maladies seem most to affect the north-west portions of Europe; but the cause is perhaps to be found in the greater mental activity, enterprise, and exposure to all the reverses and fluctuations of fortune, which belong to the state of society in these countries.

Among trades, weavers and tailors are great hypochondriacs; but shoemakers seem to be in this respect pre-eminently wretched. Zimmerman pointed out this fact, and ample experience has verified it. Seated all day on a low seat; pressing obdurate last and leather against the epigastrium; dragging reluctant thread into hard and durable stitches; or hammering heels and toes with much monotony; the cobler's mind, regardless of the proverb, wanders into regions metaphysical and political and theological; and from men thus employed have sprung many founders of sects, religious reformers, gloomy politicians, "bards, sophists, statesmen," and all other "unquiet things," including a countless host of hypochondriacs. The dark and pensive aspect of shoemakers in general is matter of common observation. It is but justice to them, however, to say, that their acquisitions of knowledge and their habits of reflection are often such as to command admiration. The hypochondrical cast of their minds is probably in part induced by the imperfect action of the stomach, liver, and intestines, in consequence of the position in which they usually sit at work. General readers may be glad to be informed that the regions under the short ribs on each side are called by anatomists the *hypochondria*, and that in these regions are lodged some of the most important organs of digestion, from a supposed impairment of which the hypochondrical malady gained its appellation. It has also been called the English malady, and the *Spleen*, from its imaginary connection with a disease of that organ, which does not seem to be verified by experience.

The most interesting and the most melancholy hypochondriacs are to be found among men of cultivated minds and sedentary habits, whose sufferings appear but little in their works. Many a page, which has made a thousand readers gay, has been written in all the misery of hypochondriasis; and some of the finest productions of literature have been produced at the price of an affliction which seems to embody every other form of affliction. On persons of this kind, both the mental and the bodily causes of hypochondriasis are accumulated. Neglect of exercise is combined with frequent mental excitement, and a constitution of peculiar sensibility is exposed to all the trials incidental to men of little worldly wisdom and small possessions. Depressing circumstances, a jaded mind, a feeble body, and rebellious digestive organs, thus conspire to call up all the demons of hypochondriasis and of melancholy, and the days of the unhappy victim become pretty equally divided between mental brilliancy and a state bordering on moody madness.

There are not many maladies of which the early and proper treatment is more important than hypochondriasis. Habit daily adds to the mental part of the disorder; the corporeal derangements, whether primary or secondary, become inveterate by delay; the continual attention to sensations heightens their force, and seems to impart an activity to the extreme nervous branches, or in some other way so to disturb both them and the small blood-vessels, as actually to cause the supervention of disorders, of which a long dread has been entertained. The illustrious Laennec was of opinion that long continued mental depression favoured the development of pulmonary consumption; and an apprehension of the occurrence of cancer has often been thought to dispose to cancer. But if these terrible consequences should not follow, the condition of the hypochondriac is yet exceedingly to be pitied. He is disqualified from many or all of the duties of life; his temper yields to continual irritations; his mind becomes weak and habitually directed to trifles; his feelings become selfish and contemptible; and his life is little better than a long disease.

The treatment must necessarily be partly mental, and partly directed to the regulation of the disordered bodily functions. To restore the proper condition of the stomach, the liver, the duodenum, or some other portion of the intestines, may require a skilful physician, and varied means; only applicable by those whom experience has taught to adapt general principles to individual examples. Whatever medicines are given, it will generally be found serviceable to combine with them some form of bathing. Early hours of going to bed and rising; a careful avoidance of great irregularities in living, which are of all things the most surely paid for by fits of despondency; an agreeable course of reading; much exercise in the open air; cheerful society whenever society is not more irksome than silence and retirement; a moderate pursuit of field-sports; but, above all things, when it is practicable, a frequent change of residence;—all these things may be looked upon as important parts of the treatment.

The proper regulation of the diet is very material; and it will be happy for the hypochondriac if, amidst the fancies and the follies of medical authorities on this particular point, he can elicit from his adviser some rules which are not utterly irrational. In general, we apprehend that the *quantity* of food taken, and the times at which it is taken, demand more attention than the *quality* or nature of the food. Particular cases will suggest particular precautions; but what is commonly called living by rule is certainly not the rule of health. With a few exceptions, we would rather recommend the invalid to peruse lord Bacon's short Essay on the Regimen of Health than all the books on diet that were ever compiled.

Of the importance of a proper regimen of the *mind* in this unfortunate malady, too much cannot be said. In some unhappy cases the mind is from the first too much diseased to permit the establishment of such regimen, and, as in the case of Cowper, the prospect is truly cheerless. But in many cases the efforts of the patient may be successfully roused. A journey, a new study or pursuit, frequent rides on horseback, or any thing which effects a complete diversion of the thoughts, is most expedient; and contrivances apparently slight are sometimes rewarded by great results. The patient has, in favourable cases, sufficient power left to abstract his attention from the subject of his own health, and from medical reading, if strongly impressed with the danger of pursuing such trains of thought: and when exhorted to change his diet or regimen, to take exercise, or make any other effort, he may truly be encouraged with the assurance that if he

"Throw but a stone, the giant dies."

Such are some of the principal circumstances worthy of observation in hypochondriasis, a disease which, although it sometimes attacks women, is much more common, as a consideration of its causes might lead us to expect, in men; and one of the worst of woes of that period of life when the activity of youth is gone and the characteristic serenity of age is not yet attained. There is no time in a man's life in which the management of the mind is more important than in this; as, without care and due precaution, it may prove to be a period of discontent, of unhappiness, and even of imprudencies and rashness, for which there is no longer the excuse of youth and inexperience.

Hysteria, or hysterical disorder, is, as we have already remarked, not the disorder of middle aged gentlemen, but of young women, for the most part of delicate frame, highly susceptible nerves, indolent habits, and minds less carefully regulated than would be desirable. It is, however, sometimes the affliction of older females, females of middle age, and occasioned by derangements of the health which especially disorder the nervous system. In most of its forms it is a very troublesome malady, and difficult of cure. Yet so much may be done by a careful attention to the general regimen of young women, to lessen the extreme susceptibility of the nervous system, that hysteria deserves quite as much attention as hypochondriasis.

The slighter indications of the hysteric temperament generally become observable in young women after they have attained the age of fourteen or fifteen, and consist of an increased sensibility to all causes, however trifling, of a nature to produce pleasure or chagrin. After a few years, if the habit of giving way to every emotion is not checked, and if any circumstances happen which are of a nature to disturb the affections, the more marked features of the disorder called hysteria are wont to appear; such as immoderate fits of crying or of laughing, easily induced, and very irregular spirits. At length, on the occurrence of something which causes either great disappointment or unusual sensations of pleasure, or after the excitement of animated society, or after dissipation and fatigue, the young lady has what is known to be an hysteric fit. She bursts into tears, and sobs violently, and for a long time, and as if she would inevitably be choked; or, being moved to laughter, she continues laughing so loudly and so long as to alarm the bystanders. Perhaps she falls down, or sinks into a chair, quite exhausted. Her face is red, her eyes are closed, and the eyelids are tremulous; the mouth is often firmly shut. It is perceived that the heart palpitates violently, and the arteries in the neck pulsate strongly. The breathing is variously affected; very often there is an evident constriction of the throat, and the patient forcibly applies her hands as if to remove it; sometimes the respiration is profound and tranquil, sometimes short and hurried. In some cases the hysteric person lies composed and quiet, but very often the hands and arms are violently thrown about, or the hands are strongly pressed upon the stomach, as if for the relief of violent pain; in some instances the trunk of the body is contorted, and occasionally the convulsive movements are more general and not easily controlled. Such an attack may last a quarter of an hour, or an hour, or even many hours, and may leave the patient uncomfortable, affected with headach, and feeling pain in the throat, and in those muscles which have been in strong action during tha fit. Her own account of the fit commonly is, that she perceived a sensation as of a round ball in some part of the bowels, which seemed gradually to ascend until it reached the upper part of the throat, and then to remain, pressing upon the windpipe until she thought she should be suffocated. Although there has been such loss of control over the voluntary muscles during the fit, and such irregularity in their actions, it will not be found that the patient has always been deprived of consciousness of what was taking place around her; she has perhaps heard all that was said, and known all that was done, although quite without the power to speak, or to give any indication of her own feelings or wishes.

One of the most singular characteristics of the hysterical disorder is, that in individuals liable to attacks of the above description, or any modification of them, (for the forms of the paroxysm itself are very variable), there is often a resemblance to or simulation of various other maladies. These would appear to be some unusual condition of all the nerves of the body, productive, according to various accidental circumstances, of the signs of disease in the various parts which they supply, although such diseases do not in reality exist. Medical practitioners learn to recognize these spurious maladies, which quite impose upon common observers. A patient is thought to be suddenly and violently attacked with inflammation of the brain, or of the bowels, or of the lungs; or, some previous disease actually existing, certain symptoms are superadded, which make the case unlike any that are ever found in systematic descriptions of disease. Even in the course of a fever, a disease which seldom fails to excite the practitioner's anxiety, he is liable to be surprised, when the subjects of them are hysterical by constitution, by such strange accidents as but for that explanation would be either unintelligible or would mislead him into very erroneous practice. The diagnosis, consequently, or detection of hysteria, in all its possible forms and combinations, is a very important study to the physician; and a thorough acquaintance with its mutable character, and its property of mixing itself up with other maladies, sometimes enables him to tranquillize the fears which such odd combinations of disorder are well calculated to excite in the patient's friends and relations.

Among the many troublesome accompaniments or parts of hysteria, may be mentioned a particularly distressing cough, of a distinct and marked character. All coughs derive some modification from the cause in which they originate. The cough of a common cold differs from the deep hollow cough of consumption, and both are distinct from the hoarse cough which generally attends or precedes the measles. The cough or hooping-cough is distinct from all. But the cough of hysteria is not less peculiar; it is commonly loud, short, and repeated; dry and hard, and shaking the whole frame; induced and prolonged by all kinds of mental irritation, and quite refractory under common demulcent and anodyne treatment. It is sometimes periodical, and dependent on temporary causes; but often permanent, or at least not removed until by general means the patient's health and strength undergo great improvement. In some patients it puts on the character of croup, and in others of asthma; still, however, in most cases, only admitting of abatement by means directed to the general improvement of the constitution.

Imitating almost every disease, hysteria occasionally puts on many of the signs of approaching death. The pulse sinks until it can hardly be felt; the hands and feet become cold; the patient breathes with difficulty, and feels convinced that nothing can save her; and these very distressing symptoms and sensations may last for many hours; may return on many successive days, and yield at last, leaving the patient quite well. Such things happening to persons in the prime of life, their blooming appearance some weeks after recovery is often remarkably contrasted with the gloomy circumstances by which they were surrounded when the attacks were at the worst.

If the hypochondriacal patient feels a dread of diseases merely on account of some depraved sensations, we cannot wonder that the hysteric patient, n whom many of the functions are often manifestly disturbed, should believe herself to be labouring under incurable disorders. The action of the heart, for instance, is very frequently irregular in hysterical patients; the pulse intermits, and peculiar sensations of oppression, or obstruction, or temporary cessation or interruption of the heart's action, are not uncommon. The distinction of such cases from those in which the heart is actually undergoing some change of structure is exceedingly important; especially where, as not unfrequently happens, the palpitation depends on debility, induced perhaps by a previous attack of fever or other illness; for in such weakened states the symptoms of hysteria often manifest themselves, and bloodletting and other measures, which in the case of slow organic change might be requisite, would, by still further increasing the debility, exasperate the hysterical malady, and probably render it inveterate.

Divers troublesome symptoms incidental to females of delicate constitution, and often looked upon as inexplicable, and consequently as affording no clear indications of treatment, are discovered to be truly hysterical in their nature, either from its being found that less equivocal signs of hysteria are occasionally exhibited by the patients liable to them, or from the success which follows the administration of what are called anti-hysteric remedies. Among these symptoms are an occasional loss of voice; a difficulty of swallowing sometimes so great as to create fears of an obstruction of the gullet; pain fixed to one particular spot, as in the left side, or in the loins, or over one eye. These affections are not unfrequently very obstinate, resisting all kinds of treatment for months, or returning after short intervals of relief, even for years. When their dependence on a disordered condition of the nerves is not suspected, the patients are, of course, needlessly subjected to various plans of treatment, founded on a belief in the existence of local disorder. Extreme pain in the course of the spine, with great tenderness and a loss of power in one or in both of the lower extremities,—a combination of symptoms sufficient to excite apprehension,—are all found, in some cases, to depend on a morbid condition of the nervous system, and to be parts of hysteria. All these circumstances expose the hysterical patient to the same deceptions which we have said that unprincipled pretenders to medicine practise with so much impunity on the hypochondriacal. To assert the existence of some serious local disease is to gratify the patient by conforming to her own belief, and to ensure her fullest confidence. To tell her there is no local disease; that her symptoms depend upon her general state of health; and that relief is only to be expected from long perseverance in the use of medicine calculated to improve it, and united with the sacrifice of some indolent or luxurious habits; is to preach a very unwelcome doctrine, and often ensures the dismissal of the too-faithful counsellor.

The attacks of hysterical pain are sometimes so sudden and so violent as, when affecting the head or the bowels, to excite, even in the minds of the practitioner, much doubt as to their possible origin and tendency, and few parts of medical practice call for a more careful comparison of all the attendant symptoms. The absence of fever, the tranquillity of the pulse, the complete intermissions of pain occasionally occurring, and other symptoms according to the particular case, can alone be guides to practice, and, warily regarded, save the patient from very unnecessary measures.

In certain examples of hysteria, the paroxysm or fit is such that the patient lies motionless, breathing slowly and deeply, and resembling one apoplectic. What is called catalepsy, or a state in which the muscles, no longer obeying the will, continue contracted in whatever position or attitude the limbs or body may be placed, seems to be a variety of hysteria. The *trances* in which patients have been supposed to be dead, but many of the cases of which are fabulous or exaggerated, are also of the family of hysteria.

There are other varieties of hysterical affections, so extravagantly odd as sometimes to have caused suspicions that the subjects of them were under the influence of magic or witchcraft. Such strange motions of the limbs, such unaccountable predilection for the repetition of some unmeaning syllables, or for singing, "without mitigation or remorse of voice," a few notes suggested no one can tell by what association of ideas, or snatches of ballads or spiritual songs, have at times characterized this disorder, that its being ascribed to supernatural agency really cannot excite surprise; the more especially as such strange forms of affliction, like all the forms of hysteria, are found to be *catching*, and have even at times prevailed as a kind of epidemic. It has also sometimes happened, that amidst the excitement of the malady the patients have been gifted with such acute mental perception, or so much activity of the mental powers, and such unwonted eloquence, as to seem to the unaffected to be endued with the spirit of prophecy and divination. The history of animal magnetism presents some remarkable illustrations of these circumstances.

The *causes* of hysteria are often purely corporeal, connected with some disorder which the physician may recognise; either some disorder peculiar to the female system, or existing in the organs of digestion, and particularly in the neglected state of the bowels; or in the state of the patient's strength or weakness, as in fullness of habit, or the state opposite to fullness; or in a peculiar susceptibility of the whole nervous system. This susceptibility is always one link in the chain of causes, and sometimes it is itself the chief cause. When depending, with all the hysteric phenomena elicited in consequence of its existence, on primary disorder of the stomach and bowels, or of the uterus, the cure is strictly medical. The removal of the primary disorder will sometimes be followed by a return of the nervous system to its healthy condition, even in cases in which hope had almost been abandoned; but both in this case, and in the case of the nervous susceptibility being itself apparently the chief or primary cause, a mixed treatment is demanded, regiminal, medicinal, dietetic, and moral, which can only be instituted or pursued by the combined efforts of the physician, and of parents, relatives, friends, and guardians.

Southern climates tend to develope the too great sensibility of the nerves which disposes to hysteria; and certainly the enervating and artificial atmosphere of very warm rooms, in which young women often spend much of their time in our own climate, is exceedingly detrimental to the general tone of the nervous system, entirely indisposing them to face the air and persevere in taking exercise on foot. The indolence of the morning is very ill compensated for by the fatigues of the evening, where, in rooms greatly heated and crowded, the young lady who passed the morning in bed, and the middle of the day on the sofa or in an easy chair, passes the night in dancing, or in listening to musical performances, prolonged far beyond midnight.

Nothing is more remarkable in the present age of mental excitement than the care with which, by most of the prevalent customs and a system of fashionable education, the minds of the generality of females are consigned to inactivity and utter uncompanionable insipidity. Whilst the expression of almost every elevated feeling is repressed as inconsistent with refinement, every artificial want, every habit of selfish gratification, is as much as possible indulged. Active exercise in the open air, cheerful country walks, a joyful participation of the hearty pleasures of any society in which every movement is not taught by the posture-master, or conversation conducted according to the rules laid down in books professing to teach female duty and behaviour;—all this would be inconsistent with the general aim of all classes to imitate the manners and habits of the highest. All kind of reading, except of works the most frivolous, is considered ungenteel, or at least, singular; and any display of deep and unsophisticated sentiment excites universal pity. The beauties of nature, the triumphs of science, the miracles of art, excite no more than a languid expression of wonder. To apply the mind to read or understand such things would destroy the apathetic elegance which those desire to preserve, who still believe knowledge to be a very good thing for persons who live by it. With as much care as the natural proportions of the female figure are destroyed by stays made upon abstract principles, is the mind cribbed and cabined by custom and fashion. Then, universal ambition leads to universal difficulties as to fortune, and the only serious duty to daughters is to obtain an advantageous settlement, which, whether gained or missed, is too often thus the cause of ceaseless discontent, injured health, and all the nervous maladies incidental to an ill-managed mind and infirm body.

Barely equal to sustain a life of indolence, from which all strong and all noble emotions are shut out, the slighter pains and disappointments of life induce suffering in the frivolous and morbid mind. and any serious contradiction, any check to indulgence, any appeal of duty against pleasure, produces discontent, agitation of the nervous system, tears, low spirits, bewailings, the vapours, or a hysteric fit. The tendency to the latter exhibition of feelings injured or irritated, is found to be partly under the control of the will, or is at least often yielded to as the shortest way of putting an end to the disagreeable opposition of parents or a husband. Youth gives place to middle age, and middle age leads on to declining years, and, the mind having no resources to retreat upon, the frivolity of early life is too frequently exchanged for a feverish devotion and a chronic hysteric sensibility. Vainly hoping to obtain from various stimulants that feeling of health which no stimulus can bestow, so long as good atmospheric air is not breathed and the voluntary muscles are not exercised, the invalid sinks by slow degrees into the selfish inactivity of a confirmed valetudinarian. and in these cases the double grievance of hypochondriasis and hysteria is often incurred by the same individual, and seems to furnish an excuse for the neglect of every duty requiring the smallest exertion of body and mind. See *Histoire Philosophique de l'Hypochondrie et de l'Hysterie*; par E. Dubois, Paris, 1833, 8vo., and Foreign Quarterly Review, No. 23.

I

INGLIS, Henry David, a popular writer of travels, was the only son of a barrister in Edinburgh, and was descended from a very ancient family. His maternal grandmother was daughter of the celebrated colonel James Gardiner, who fell at the battle of Prestonpans; and was herself the authoress of an heroic poem. Through her Mr Inglis was allied to the noble house of Buchan and the Erskines. The writings of Mr Inglis are twofold—Travels and Fiction. Of the former class, his "Spain in 1830" is unquestionably his best work; and his "Ireland in 1834" attracted very considerable notice. His "Channel Islands" abounds in elegant descriptions of natural scenery; while his "Tyrol," his "Switzerland and the Pyrenees," and his "Norway," are all books of much merit, and have altogether contributed to establish for him a just and well-earned reputation; while they have been of great utility to the world, by making one part of it better able to appreciate the moral character and the physical advantages possessed by other parts. Of his fictitious works his "New Gil Blas" has been ranked by his biographers as his best. Mr Inglis died in London, on the 20th March, 1835, aged forty.

INGLIS, John, D.D., an eminent divine of the church of Scotland, was a native of Perthshire. In 1776, he was translated from the parish of Tibbermuir to the Old Greyfriars' church in Edinburgh, where he became the colleague of Dr Erskine, and the successor of principal Robertson. He was subsequently appointed one of the deans of the Chapel Royal. For nearly thirty years, he was the leader of the presbytery of Edinburgh; and, though he differed in church politics from what is called the popular party, he lived with all on terms of affectionate kindness and cordiality. As a preacher, his discourses were much admired for their intellectual character. His death took place, at Edinburgh, on the 2d Jan., 1834, at the age of seventy-one. Besides some minor publications, he left two works of great merit—one on the Evidences of Christianity, and another in defence of Ecclesiastical Establishments.

INSANITY. (*a.*) There is an opinion afloat that insanity is on the increase in this country, and the opinion is in some degree borne out by a comparison of late registers with those of an older date. Dr Powel, who first directed attention to this particular department, grounded his belief of a positive increase on the apparent augmentation in the London registers for lunatics. These included all lunatics confined in private asylums throughout England, which gave an increase as compared with eight quinquennial periods from 1775 to 1814; the aggregate for the former being 1783, for the latter 3647. This is a conclusion which Dr Burrows says is not borne out by facts, as the register does not comprehend lunatics confined in unlicensed houses. Comparing the lunatics with the census of the population for 1800, Dr Powel arrived at the conclusion, that there was one lunatic to 7300 persons, a conclusion which shows how absurd it was to attempt a statistic account of insanity with means so inadequate. Pinel thought that the increase in the returns of the insane might be accounted for in various ways—irregularity in former returns, and increase of the inmates of asylums, from the better arrangements which now prevail. He says that the greater the liberty in any country, the greater the number of insane is likely to be.

In 1806, a select committee was appointed to inquire into this subject, and in the report which they sent in, they gave for England and Wales an aggregate of 2248 lunatics. In 1815 another report was made, which gave nearly double the number, but which increase should be ascribed to the inaccuracy of former returns rather than to any positive augmentation in the number of the insane. By the returns which were made in 1819, Dr Burrows found the aggregate of lunatics confined in public hospitals and asylums to be 1456, in private asylums 2585, in all for England and Wales, 4041, to which he added half the number for those confined in private asylums not registered. In this way he raised the whole number to 6000, which he considered the nearest approximation to the total number of lunatics in Great Britain, and which gives us a proportion of about one lunatic in 2000 persons. In 1826, Sir A. Halliday made a return of the lunatics confined in public and private asylums in England and Wales, giving as the gross amount, 4782, to which he adds those of whom the law takes no notice, as living with their friends, and concludes, from an experience of twenty-five years, that the number confined in England and Wales, in public and private asylums, exceeds 8000; yet, with this apparent augmentation, he is not disposed to believe that insanity is on the increase with us. He estimates the insane of Scotland at 3700. In 1829 he sent in another report, which gave for England and Wales, 6806 lunatics, and rates the idiots at 5741, to which he adds for places not returned 1500, in all 14,000. The proportion of insane to the population is, he says—England one in 1000; Wales, one in 800; Scotland, one in 574. In the gross amount of 14,000 the paupers are estimated at 11,000.

Some very curious returns have been made, showing the influence of different habits and pursuits in life in producing insanity. In twelve English counties where the population is employed in agriculture, the proportion of insane to the general population is one in 820, and the lunatics are to idiots as five to seven. In twelve counties where the people are differently employed, the insane are to the population as one to 1200. People who work in mines are reported to be less liable to insanity than those who work on the surface. Is it because they are less exposed to the exciting influences of a busy life, which are ever passing around us in our intercourse with the world, and from which miners are for a great portion of their life withdrawn? In six maritime counties the lunatics are to the population as one to 1000, and idiots are to lunatics as two to one; while in six counties of North Wales there are seven idiots to one lunatic, and one lunatic to 850. In South Wales the proportion of lunatics to the population is one to 750, and idiots are to the insane as one to eight and a half. Throughout Wales, as in many parts of England, there is a preponderance on the side of female lunatics over males; female idiots are also more numerous than males; in Wales the excess is very great. The explanation afforded for this is, that nearly half the population is employed in agriculture. There is a general impression that, in agricultural districts, where people work heard and where females are employed in labour, the violent exertions required in such occupations produce distortion of the body, and may very materially affect the growth and development of the brain, and even the form of the cranium *in utero*. It is well known that females are obliged to work during the whole of their pregnancy, and there can be no doubt of the injury which such occupations must entail on the offspring. According to a return made for Scotland in 1821, the proportion of lunatics to the population is one to 474, but little reliance can be placed on this as a correct estimate of the state of insanity there. By the returns which were made for the French hospitals, from 1801 up to 1823, there is a steady and progressive increase. The first return gave, in 1801, 1070 lunatics, and the last, in 1823, gave 2493. Rating the population at thirty-two millions, Esquirol estimates the insane as one in 1000. In France, as in England, the operating causes vary very much. Of 336 lunatics in his establishment, Esquirol says, there were only three from drunkenness. It, however, prevails as an exciting cause to a great degree in Salpetrière, where women only are admitted, and of whom one-twelfth part are girls of the town. We find also, by the reports which Dr Whally has made on the effect of drunkenness, that it prevails to a great extent in Lancaster infirmary.

All the attempts which have hitherto been made to account for insanity by pathological appearances have proved hopeless. In examining the morbid results, we are led to consider how the mental disease could have resulted from them; but here the nature of the subject completely baffles us. In cases of other diseases, as of the lungs, whose functions are now well understood, the morbid change accounts for the derangement, but the case is quite different when the mind is affected. We are ignorant of the manner in which it performs its functions, and of the connection between the organic agents and the operations commonly referred to it. Hence, some are inclined to doubt whether the phenomena of insanity are the result of changes discovered in the brain, and view them as the result of the diseased operations of the mind, believing that hardness of brain and thickening of membranes are only formed after mental disease of long standing, and are altogether wanting in recent cases of insanity; upon these grounds mental disease is considered as a deviation from the healthy state, different from that which anatomy exhibits.

The different states of the intestinal canal have been considered a fruitful source of insanity, both to the rich and the poor—to the former, from over-indulgence; to the latter, from very opposite causes—low diet, bad food, cold, constipation. Worms have been viewed as producing it, because, in some cases, mad people were cured on the expulsion of worms by the intestines. Esquirol records two cases of this kind. It was also a popular belief that it is more intimately connected with disease of the abdominal viscera than the thoracic, but this has been proved not to be the fact. In 168 cases Esquirol found only two cases of liver-complaint, whilst in the same number he found sixty-five cases of disease of the lungs, and he is disposed to believe that insanity is attended by disease of the thoracic viscera in two cases out of eight. To this opinion Georget is inclined, who adds, that one-half of the lunatics who die at Salpetrière are cut off by phthisis. In some of these patients it is rather curious that, where large excavations are found to exist after death, no expectoration took place during life. Greding found in a hundred maniacs, forty affected with phthisis. Of the whole number, seventy-six had effusion into one or other cavity of the thorax.

In the Dutch States, the number of insane, from 1820 to 1825, was 4520. Guislain is disposed to ascribe the increase of insanity to the positive augmentation which has taken place in the population since the war, by which the number may be augmented in the ratio of the population. He agrees with Sir A. Halliday, that though a temporary augmentation may take place, from the pressure of circumstances, there is no danger of its permanently progressive increase.

The returns afforded by the Prussian States, if correct, should necessarily alarm us, but [illegible], who has had opportunities of judging of their fidelity, attaches but little faith to them. The proportion of lunatics there to the population, is one in 666½.

Perhaps the best statistics are supplied by the government of Norway. In 1825 returns were ordered of the sex, age, situation, and number of insane. The report was drawn up by Dr [illegible], and published in 1828. The lunatics are to the population as one to 551. Here is a marked difference as compared with England and France. The population of Norway is employed much in agriculture and rearing cattle, embosomed in mountains, and without any manufacturing towns. These are to be taken into account in considering the comparative state of insanity there, in comparison with other countries.

From Spain we are without any satisfactory returns, while we find the Italian States giving only one in 4879. Here we find that, where insanity is scarce, idiotism is always found to predominate, more especially in Spain and Portugal.

The statistics of insanity in the United States of America are less complete than those of Europe. In many of the States nothing is known upon the subject, no measures having as yet been adopted to ascertain the number of the insane. A few of the States have made some partial investigations; but the object of these has generally been to ascertain if the insane were sufficiently numerous, and their situation sufficiently necessitous, to require the assistance of the state for their support. That there was such a number, and such want, has soon been ascertained, and then further investigations ceased. A committee of the legislature of the State of New York, appointed to examine this subject, reported in [illegible] that there were then in that State 2695 lunatics and idiots, or one to 713 of the population. Of this number the committee considered *five eights* to be idiots. In 1821, the great number of recent cases of insanity in Connecticut, led a few medical gentlemen to attempt ascertaining the whole number of the insane in the State, and to devise the means of providing an hospital for their reception and cure. "To obtain information," they say in their published report, "circulars were sent into every town in the State, addressed to clergymen, physicians, and other respectable gentlemen, requesting returns of the number of the insane, their ages, sex, cause of disease, &c. The returns in answer to these circulars, although many of them were very imperfect, satisfied the committee that at least *one thousand* individuals within the limits of the State were mentally deranged, and that the condition of most of them was truly deplorable." As the population of the State was at that time 275,202, this would be *one* insane person to 275 of the population; a proportion so great that we suppose some idiots were included; though we know it was the decided opinion of Dr Todd, the late distinguished physician to the Connecticut Retreat for the Insane, whose means of information on this subject were better than those of others, that *one thousand* was not above the actual number of the insane in the State of Connecticut. In Massachusetts insanity appears also to be very common. Dr Parkman of Boston, stated in 1818, that 541 insane persons had come to his knowledge in that State, though he supposed he had heard but of part. In 1833, a committee of the legislature of that State reported they had ascertained that in sixty-eight towns, containing a population of 364,327, there were 168 insane persons and 111 idiots, *in confinement in gaols, alms-houses, and houses of correction*. This would afford above 600 insane and idiotic persons in confinement in the State, if we assign as many in proportion to the rest of the population. But it is probable only a small part are thus confined; and no doubt an accurate inquiry would exhibit more than double or triple that number. From considerable knowledge of portions of Massachusetts, we are confident, that at the time referred to, not more than one-fourth, or one-third, of the insane and idiotic were in the places of confinement alluded to by the committee. In New Hampshire, it appears from recent inquiries that insanity is nearly as prevalent. A committee of the legislature of that State reported, during 1837, 350 insane persons in the State, exclusive of idiots. We are informed that the committee, who made the report, were of opinion this estimate was too low. But this number exhibits *one* case of insanity to 800 of the population; and if we add as many idiots in proportion to the insane, as there are in the State of New York, there would be *one* crazy or idiotic person to 300 inhabitants. A select committee of the legislature of the State of Vermont recently reported, that there were, in fifty-nine towns, sixty insane males and eighty-four females, making a total of 144, of whom forty-five are town paupers, and forty are poor and destitute. This committee estimate the whole number of the insane in the State, exclusive of idiots, at 300, or one to 1000 inhabitants. These statistics respecting insanity, though few and imperfect, show, that the disease is alarmingly prevalent in the northern States of the Union.

With respect to the treatment of this very distressing affection, the only hopes of cure rest upon an early application for proper medical advice. The average duration of the complaint under the care of Pinel was from five to six months, but the greatest number of recoveries took place in the first month. This is also the opinion of Esquirol. The greatest amount of recoveries is obtained in the first two years, but the mean duration is less than one, and after the third year, the chance of cure is scarcely one in 30. This is a conclusion at which Esquirol arrived, founded on an experience from 1804 to 1813 at Salpetrière. A similar conclusion has been come to at the Gloucester asylum.

The most favourable age for recoveries is from twenty-five to thirty, but women frequently recover after forty-five; and there are four cases recorded at Charenton of recoveries where each patient was seventy years old. Writers in general admit that recoveries are more frequent in women than men.

Dr Burrows gives a report of cures in recent cases ninety-one in 100, and in sixty-four old cases nineteen cures. This is considered by some as much too great, and they account for it by supposing, that many were discharged before a complete cure was effected. Esquirol states that, out of the gross amount of admissions at Bicêtre, of 12,592, 4968 recovered. At Bethlem, St Luke's, and the York asylum, the admissions from 1748 to 1814 were 16,516, of whom 5918 recovered. From this it appears that the cures in England were formerly fewer than in France. In Lancaster there were admitted, from 1817 to 1832, 1750 lunatics; of these, 597 were cured, a proportion of about forty in a hundred. In the Retreat, near York, from 1812 to 1833 inclusive, 334 were admitted. Of these, 168 were cured, fifty died, thirty-seven removed, ten improved, sixty-nine remained. Here the probability of recoveries in recent cases is nine to one.

Insanity is not reckoned among the diseases injurious to life. In this state the brain, though unfit for intellectual operations, is able to carry on other processes dependent on it, but which are subservient to physical existence. In 1812 there were at Bicêtre one who was there fifty-six years, three upwards of forty years, twenty-one more than thirty years, fifty upwards of twenty years, and 150 for ten years. The dates of entry for seven cases, at Salpetrière, were from fifty to fifty-seven years, eleven from fifty to sixty years, and seventeen from forty to fifty.

The admissions of males to females are, at Charenton, as three to two. At Bicêtre the case is reversed, females are to males as three to two. In the south of France there are more females than males in asylums; the contrary obtains in the north; but throughout France the females are to males as fourteen to eleven. In Spain there is an excess of females of one-fifth over males. In Italy the males predominate. According to the returns which Guislain has made of Holland and Belgium, females are to males as thirty-four to twenty nine.

In Great Britain and Ireland the males are to females as thirteen to twelve, and in the United States the males are to females as two to one. Esquirol shows, from the gross amount of lunatics confined all over Europe, of 76,526, that there were 37,825 males, and 38,701 females, about thirty-seven to thirty-eight, without the fraction.

Insanity is not limited to any particular age; it may begin as early as two years of age, but does not become common until fifteen. Georget has collected, from the admissions in France and England, from the age of ten to seventy, 4409 patients, and the average of admissions for every ten years:—

From 10 years to 20	266
20 - 30	1106
30 - 40	1416
40 - 50	961
50 - 60	461
60 - 70	174
70 and upwards	25
	4409

There is one leading feature in the management of the insane in which all writers seem to agree—seclusion. Pinel dwells on it as the most rational mode of cure, and considers the separation from friends as indispensable. Willis changed all the servants of George III. Confinement is also necessary; but there is still considerable difference of opinion how far it should be carried.

A system of treatment is adopted at Gheel in Belgium, which, if acted on in other countries, would doubtless be productive of great advantages. Gheel is a small village, where 500 or 600 lunatics are spread among the cottages of the peasants. Each patient is to labour in the fields or gardens for a certain number of hours every day. When not employed they are allowed to walk about without restraint, and are summoned to their homes by a village bell. The peasants are bound to treat them with kindness, and are rewarded according to the care they take of them.

A farmer once obtained in Scotland a great reputation for curing insanity. He fastened his patients to his plough, and made them work his grounds, and by degrees brought the most intemperate to reason. Music has been employed with variable success in the treatment of the insane. There are two states in which it may be useful; first, when the invalid himself plays, his attention is for a time agreeably occupied; and next, when another person plays, pleasing sensations are thus commonly excited. Frank employed it largely, and found it of great advantage in mania, while Esquirol states, that he found it in similar states to produce raving fits. There is an impression with the majority of the profession, that in mania it is too exciting, but in states of lethargy or apathy it may be used with benefit. Dr Cox employed it largely in his establishment, but his successor, Dr Bompas, has altogether discontinued it. The Quakers, in the Retreat at York, were the first who discontinued the use of chains; and the only restraint used there is, seclusion, a straight-waistcoat, shower-bath, and a few occasional privations.

With respect to the frequency of insanity in the different states and conditions of life, Esquirol has supplied some interesting returns:—For the three years, 1826—1828, there were admitted into Charenton 619 patients; of these, 282 were married, 293 never married, and 44 widowed. The number of men was 386, women 253. Of the men 206 were unmarried, and 87 of the women, which shows celibacy to be a fruitful source of insanity. Another large class, composing the inmates of this establishment, is made up of officers and soldiers. For the three years above mentioned, there were forty-nine officers and forty-seven soldiers admitted, a proportion exorbitantly great, considering the relative number of each class. Hereditary insanity is here estimated at one-seventh of the admissions.

From the review which we have now taken of the statistics of insanity, we do not think that the opinion advanced by some writers, of a positive and permanent increase in that painful and distressing affection, is at all supported by facts. That there is an apparent increase in the number returned of late, as compared with older records, is quite clear, but this is only what is manifest in every other department of inquiry, when attention is particularly directed to a subject previously much neglected. The question of insanity was hitherto surrounded with so many delicate and distressing associations, that many cases have altogether escaped notice. And when we consider the system of treatment which then universally obtained, we cannot wonder that the insane were allowed to drag out a miserable existence in the society of friends, rather than be consigned to the hopeless alternative of chains and a dungeon. The improvements which a mild but decisive system of treatment, first adopted by those quiet unobtrusive men, the Quakers, in the Retreat at York, have at length forced themselves on general attention. It is now the prevailing system throughout Europe, and in all our own institutions. Those asylums are now so much improved in their internal economy and comforts, and the chance of cure so great, when attention is early directed to it, that cases are instantly sent thither, which under the former bad arrangements, would never have reached them. In this way the apparent increase may be accounted for; besides which, slight shades of mental aberration are now classed under one or other form of madness, which probably, at a period when the subject was not so well understood, would not be classed at all under any form of insanity. These, with other temporary causes, will occasionally give a slight increase to the returns, which is often mistaken for a progressive augmentation in this painful disease.

Asylums for the insane are of modern origin. In fact, all public hospitals for the sick and poor may be so considered, as they originated with the Christians of the third or fourth century. But long after those suffering from other diseases were received into hospitals and provided with medical assistance, lunatics were neglected, and perished in great numbers. Some of the most furious were confined in small cells, or shut up in convents and dungeons, while others were burned as [illegible] or as possessed of demons. Those that were tranquil were permitted their liberty, abandoned however to neglect,—to the abuse and laughter, or to the ridiculous veneration of their fellow-creatures. But about the commencement of the [illegible] century, lunatics began to be received into the general hospitals, where they were confined in the most obscure corners of the buildings, and [illegible] no medical aid. Soon after this, in some of the large towns of France, a few separate but [illegible] conducted hospitals were provided for the insane, though the greater part still remained at liberty, or were confined in the general hospitals. It was not until 1792, when M. Pinel was appointed physician in chief to the Bicêtre at Paris, that [illegible] views respecting the treatment of the insane began to prevail, and to be reduced to practice. At [illegible] institution, when M. Pinel took charge of it, [illegible] a large number of lunatics considered incurable. Many of them being very furious, were kept [illegible] stantly chained. This illustrious physician, after having in vain solicited the government to allow him to unchain these maniacs, finally went in person to the authorities, and advocating, with much warmth and earnestness, the removal of this monstrous abuse, obtained permission to do as he pleased respecting them. Great fears were entertained for the personal safety of M. Pinel, should he undertake to unchain them. This, however, he resolved to do. The first man on whom he tried the experiment was one of the most furious, who had been in chains forty years, and had already killed one keeper by a blow with his manacles. Pinel entered his cell unattended, and offered to remove his chains and permit him to walk in the court, if he would promise to behave well and injure no one. "Yes, I promise you," said the maniac. His chains were then removed, and the keepers retired leaving the door of his cell open. "He raised himself," says the son of the celebrated Pinel, in a paper read at the academy of sciences, "many times from his seat, but fell again on it, for he had been in a sitting posture so long that he had lost the use of his legs. In a quarter of an hour he succeeded in maintaining his balance, and with tottering steps came to the door of his dark cell. His first look was at the sky, and he cried out enthusiastically, 'How beautiful!' During the rest of the day he was constantly in motion, walking up and down the staircases, and uttering short exclamations of delight. In the evening he returned of his own accord into his cell, where a better bed than he had been accustomed to had been prepared for him, and he slept tranquilly. During the two succeeding years which he spent at the Bicètre, he had no return of his furious paroxysms, but even rendered himself useful, by exercising a kind of authority over the insane patients, whom he ruled in his own fashion." In the course of a few days, Pinel released fifty-three maniacs from their chains. The result was happy beyond his hopes. Tranquillity and harmony succeeded to tumult and disorder; and, by the aid of continued mild and judicious treatment, the most furious became calmer and more tractable, and many were restored to perfect health of body and mind. This transaction caused much sensation, not only in France, but throughout the civilized world, and created a revolution in the treatment of this unfortunate but hitherto neglected portion of our fellow-creatures. To M. Pinel is unquestionably due the great credit of first employing judicious, systematic, moral means in the cure of the insane.

At present there are in France many large institutions for the reception and cure of lunatics. Among the most celebrated are the *Salpétrière* and the *Bicètre*, and the *Maison Royale de Charenton*. The former, at the southeastern extremity of Paris, is composed of several buildings, embracing spacious gardens and grounds for exercise. This is for the accommodation of females only. It usually contains about 1000 lunatics. These are divided into three classes, the curable, incurable, and idiotic. M. Pariset has the medical superintendence of the curable class. The Bicètre, about two leagues from Paris, receives only males. It usually has from 350 to 400 patients. Here are also spacious grounds for exercise, and a farm where many of the patients are employed much of the time. The Maison Royale de Charenton, a short distance from Paris, is exclusively appropriated to the reception of the insane of both sexes, and contains 600 beds. Besides these, there are others in the vicinity of Paris and in many of the large towns of France, some public and some private, but all under good regulations and well conducted.

In London, so early as 1553, lunatics were received into the Bethlem Hospital, a royal foundation for lunatics, incorporated by Henry VIII. This hospital has been rebuilt several times, and enlarged. It is now a noble brick building, 580 feet in length, with accommodations for 400 patients. It cost about £100,000, and has an annual income of £18,000. St Luke's Hospital, another institution in London for the reception of lunatics, originated in 1732. The present building, though commenced in 1751, was not completed until 1786, at an expense of £55,000. It is a solid brick edifice, 500 feet in length, and accommodates 300 patients. This hospital has an annual income of £9,000.

Both these old establishments are quite defective, as they are without the useful appendage of spacious grounds and workshops, for the exercise and employment of the patients. In other parts of England, in Ireland, and Scotland there are many well arranged and well conducted lunatic establishments. Among the most celebrated, are the Wakefield Asylum for the West-Riding of York, and the Lancaster Asylum, in England; the Richmond Asylum at Dublin; and the Glasgow Lunatic Asylum in Scotland. But there are several others, more recently established, equally well conducted. Most of these institutions can accommodate from 200 to 300 patients. Workshops are generally attached to them, and twenty or thirty acres of land, where the patients are much of the time employed at their trades, or in agriculture. In addition to such public institutions, private ones, for the accommodation of a limited number of lunatics, are numerous in England. Often one such receives only those of the same sex. Some of them are fitted up with great elegance, with every thing desirable for the safety and welfare of the patients, affording to them all the advantages of a secluded private residence, with large, airy and commodious apartments, beautiful gardens and grounds for exercise and amusement, together with experienced and careful medical superintendence.

In many of the other states of Europe, hospitals for the insane have been provided. Some of them are well, and others badly conducted. In the Netherlands, according to Halliday, much attention has been paid to the relief and comfort of the insane. At Ghent are several public establishments, and one private, for their accommodation. At Antwerp there is an excellent hospital for lunatics. It was built about thirty years since, and usually has between 200 and 300 patients. With this is connected the celebrated and singular establishment at Gheil, which, with perhaps some modifications, might be adopted with advantage in this country. It consists of a village, or a number of detached cottages, far removed from other habitations. These buildings are occupied by peasants of good character, who receive lunatics,—mostly those that are convalescent,—treat them with great kindness, and employ them in the cultivation of the land. Each patient is obliged to labour a certain number of hours every day when able; and when not so employed, is allowed to walk about without restraint. Scarcely any accident occurs, and very few attempt to escape. The recoveries here have been so numerous and rapid, that the fame of the institution has extended far, and many persons of distinction have been sent to it for recovery.

In Bavaria and Saxony, much has been done by government for the welfare of the insane. In Denmark and Sweden there are several lunatic hospitals. Those in the former, and especially the one at Copenhagen, merit high commendation. Many of the large towns of Italy have one or more asylums for lunatics. At Milan there is a well conducted lunatic hospital, containing near 500 patients, most of whom are employed in gardening and in manufacturing clothing. At Genoa, part of the hospital of incurables is given up to the insane. About 250 are kept here in a wretched condition.

At Florence, the average number of the insane in the *Spedale di Bonifacio*, the hospital appropriated to them, is about 300. The patients are clothed alike, in white woollen dresses, and have their apartments kept very neat. When it becomes necessary to confine a patient, his hands are placed in a wooden case, and bound to the abdomen by a strap around the body. Furious patients are confined in dark rooms with well padded walls. The darkness is thought to be very serviceable in rendering them more tranquil. The management of this institution appears to be good. Many of the male patients are employed in gardening, or at their trades, and the women in knitting and spinning. At Rome, the hospital for lunatics consists of two separate buildings, one for each sex. The number of patients is about 400. The most furious are confined by chains. All varieties of insanity are mixed together, and no moral measures are resorted to in their treatment. At Naples is the celebrated Aversa, an hospital for lunatics. The sexes are here in different buildings, above 200 in each. Great regularity prevails throughout the institution. On ringing a bell, the patients rise, breakfast with decorum, and the more quiet are present at religious worship. Though the advantages of this institution are said to have been exaggerated, it is the most extensive and best regulated hospital for the insane in Italy.

In Germany, some of the lunatic hospitals are well conducted, and others not so. At the one in Berlin, containing 150 patients, no moral treatment appears to be adopted. There being no grounds for exercise, the patients are constantly confined to the house. At *Sonnenstein*, about four leagues from Dresden, there is a government establishment for insane patients, and the most celebrated and best conducted institution in Germany, if not in Europe. It consists of an ancient castle, situated on a hill, with extensive adjacent grounds. The number of patients is about 200; most of whom are occupied in good weather out of doors, in walking about the grounds, cultivating flowers, digging, &c. The women have a flower-garden in their department, which serves to occupy and amuse many of them; and others sew, knit, and spin. None are confined to the house; even the most furious patients are allowed to walk about with the others, with cloaks that conceal the apparatus that confines their hands. This measure is said to tranquilize them more than any thing else. The whole establishment is kept extremely neat, and contains workshops, a saloon of amusement, with books, a piano, draught boards, and a billiard room. At a distance from the large building, in a lovely garden at the base of the hill, is the house for the convalescents, furnished with musical instruments, and other things for the amusement of those who are recovering.

A few miles from Bonn is another excellent hospital for lunatics, on the same plan as the one at *Sonnenstein*. It contains about 200 patients. Dr Jacobi is the superintending physician, and resides in an adjoining house.

In the United States, hospitals exclusively for the insane are of quite recent origin. That established by the Society of Friends near Frankford, in the vicinity of Philadelphia, in 1817, may be considered the first; though a separate building was allotted to those at the New York hospital in 1808. But previous to this, the general hospitals of Philadelphia and New York received lunatics. Ever since the establishment of the Pennsylvania hospital in 1752, lunatics have been received there as patients, though not until 1796 was a part of the building exclusively appropriated to them. At this time upwards of seventy rooms were opened for their accommodation. From its establishment in 1752 until 1836, 4116 lunatics were received, of which number 1349 were cured, 810 were relieved, and 548 died. More than twice as many males as females have been admitted to the hospital.

Too much attention cannot be given by the proper authorities to the prevention of abuses in lunatic hospitals. There are no institutions where abuses are more likely to arise; none where they are more difficult to detect. This the history of such institutions, in England and other countries, but too painfully testifies. Some patients are frequently so violent and vindictive, that it requires great command of temper in their overseers not to retaliate sometimes; while others, instigated by appetite and passion, increased by their insanity, are perpetually on the watch to seduce those appointed to guard them, from their duty. Attendants of the most unblemished moral character, and remarkable for kind disposition, for calmness and intelligence, should be procured, and well instructed in their responsible duties; and be induced by proper compensation to devote themselves perpetually to the care of the insane.

Notwithstanding the attention hitherto given to the subject of insanity, much still remains to be learned. The medical superintendents of the institutions for the insane will have it in their power to add essentially to our knowledge of this important disease. Much, we have no doubt, is yet to be learned by autopsical examinations, made with the carefulness and minuteness which distinguish modern researches in pathology. It is already rendered probable, that in all cases of insanity there are specific alterations of the brain. These, with the symptoms of the disease, should be accurately ascertained and described. At the same time, the treatment adopted, and its effects, should be faithfully recorded, and [illegible] made public. It is gratifying, to be sure, to learn from the Reports of Lunatic Asylums, that many of the insane are cured; but surely it would be more gratifying, and of far greater utility to the public, to be informed what were the means which produced such results. Is separation from home, from relatives and acquaintance, all that is required for the cure? If so, this should be known. Many would prefer, and in many cases it would be ad-ter, to accomplish this without sending insane patients to large lunatic establishments. If medicines are serviceable, these should be made known, and the cases in which they are necessary described. In this way, such information might be imparted, as would enable many to be restored, at home, or at the onset of the disease. We are of the opinion, that in a majority of cases of insanity, proper treatment in the commencement of the disease would remove it; and it will be very unfortunate for the community, if the impression becomes general, that insanity cannot be cured except at Lunatic Asylums. Cases of relapse, and we fear they are not few, should be ascertained as far as possible; and, together with the apparent cause, made known. The public desire the whole truth; and not merely to be informed that a large number of patients were considered cured, and discharged after a short residence in the hospital. They wish to know how many of these were original cases, how many of them re-admissions, what were the means of their restoration, and every particular calculated to throw additional light on the nature and cure of this mysterious disease. In this way, public Asylums, in addition to their present utility, will become valuable schools of instruction for all medical men, and be of incalculable benefit to the country and mankind.

But is the cure of insanity all that can be done to prevent its extension in this country? Cannot the causes of this disease frequently be ascertained and avoided? We believe they may. According to most writers on insanity, *moral causes* are far more operative than physical ones in producing the disease. "The observations," says M. Georget, "which I have had it in my power to make, the more numerous ones which I have compared in authors, have convinced me, that among 100 lunatics, ninety-five at least have become such from the influence of affections and moral commotions. It is an observation become almost proverbial in the hospital, (the *Salpétrière*,) 'qu'on perd a tête par les revolutions d'esprit.' The first question that M. Pinel puts to a new patient, who still preserves some remains of intelligence, is, 'Have you undergone any vexation or disappointment?' Seldom is the reply in the negative." This opinion derives support from the fact, that the disease mostly occurs at that period of life, when the passions are excited by the strongest interests, and is chiefly confined to the civilized and intellectual communities. Insanity is a disease of the material organ of the mind, the brain; and never occurs unless this organ is affected. It is, therefore, theoretically probable, that moral commotions, mental anxiety, and the excitement of the feelings and passions, which disturb the natural action of the brain, should most frequently produce this disease.

It is, however, extremely difficult to determine with accuracy the cause of insanity in many cases. In examining the records of Lunatic Asylums, we find intemperance in the use of intoxicating drinks mentioned as a very frequent cause. No doubt it sometimes is; but we are not without suspicion that there is some other primary and predisposing cause, that is essential to the production of insanity in the intemperate. Intemperance has long been, and is now, very prevalent in some countries where there is but little insanity; and the instances are so very numerous of long and habitual intoxication without any tendency to this disease, that our suspicion is strengthened that some other cause predisposes the brain to the disease we call insanity. Intemperance is very common among the negroes and the Indians, yet insanity is rare among them. The few cases of which we have heard among the former, appeared to arise from excitement of mind. Besides, the excessive use of intoxicating drink is not unfrequently the consequence, not the cause, of the mental derangement, and among the first symptoms of the disease. This fact has been often noticed. Still we do not doubt, that some cases are correctly attributed to intemperance; and still less do we doubt, that, as a secondary cause, it is of quite frequent operation, and has much increased this disease of late among the labouring classes. When there is an hereditary tendency to insanity, or when the brain has been much disturbed by anxiety and mental excitement, then the use of intoxicating drinks unquestionably tends to develope it; and we have no doubt that very many thus circumstanced would escape the disease, if they would entirely abstain from stimulating drinks.

But altogether the most frequent cause of insanity is hereditary predisposition. Even if one sane generation has intervened, there is not, then, a certainty the next will continue so. It is much to be feared, that if marriages are contracted in disregard of this fact, the numerous cures effected of late will but serve to increase the number of the insane in another generation. In those born of insane parents, much may be done towards preventing the developement of the disease, by attention to their education, both physical and mental. "Predisposition to insanity," says M. Esquirol, "may be traced from the age of infancy; it furnishes the explanation of a multitude of caprices, irregularities, and anomalies, which, at a very early period, ought to put parents on their guard against the approach of insanity. It may furnish useful admonitions to those who preside over the education of children. It is advisable, in such cases, to give them an education tending to render the body robust, and to harden it against the ordinary causes of madness; and particularly to place them under different circumstances, from those with which their parents were environed. It is thus we ought to put in practice the aphorism of Hippocrates, who advises to change the constitution of individuals, in order to prevent the diseases with which they are threatened, by the hereditary predisposition of their family."

INSURANCE. (*a.*) The improvements which have been made in the details of Insurance generally, the increased interest now taken in, at least, one department, that of Life Insurance, and the important effects produced on the commercial and social relations of this country, by the various protecting Insurances offered to the public, seem to demand a more lengthened exposition of the principles on which these contracts are based, than will be found in our former article under this head.

The elementary principles of Insurance, under its several varieties of *Marine Insurance, Fire Insurance*, and *Life Insurance*, are thus lucidly stated by Mr M'Culloch in his *Dictionary of Commerce*:—

"The loss of a ship, or the conflagration of a cotton mill, is a calamity that would press heavily even on the richest individual. But were it distributed among several individuals, each would feel it proportionally less; and provided the number of those among whom it was distributed were very considerable, it would hardly occasion any sensible inconvenience to any one in particular. Hence the advantage of combining to lessen the injury arising from the accidental destruction of property: and it is the diffusion of the risk of loss over a wide surface, and its valuation, that forms the employment of those engaged in insurance. Though it be impossible to trace the circumstances which occasion those events that are, on that account, termed accidental, they are, notwithstanding, found to obey certain laws. The number of births, marriages, and deaths; the proportions of male to female, and of legitimate to illegitimate births; the ships cast away; the houses burned; and a vast variety of other apparently accidental events; are yet, when our experience embraces a sufficiently wide field, found to be nearly equal in equal periods of time: and it is easy, from observations made upon them, to estimate the sum which an individual should pay, either to guarantee his property from risk, or to secure a certain sum for his heirs at his death. It must, however, be carefully observed, that no confidence can be placed in such estimates, unless they are deduced from a very wide induction. Suppose, for example, it happens, that during the present year one house is accidentally burned, in a town containing 1,000 houses; this would afford very little ground for presuming that the *average* probability of fire in that town was as 1 to 1,000. For it might be found that not a single house had been burned during the previous ten years, or that ten were burned during each of these years. But supposing it were ascertained, that, at an average of ten years, one house had been annually burned, the presumption that 1 to 1,000 was the real ratio of the probability of fire would be very much strengthened; and if it were found to obtain for twenty or thirty years together, it might be held, for all practical purposes at least, as indicating the precise degree of probability. Besides its being necessary, in order to obtain the true measure of the probability of any event, that the series of events, of which it is one, should be observed for a rather lengthened period, it is necessary also that the events should be numerous, or of pretty frequent occurrence. Suppose it were found, by observing the births and deaths of 1,000,000 individuals taken indiscriminately from among the whole population, that the mean duration of human life was forty years; we should have but very slender grounds for concluding that this ratio would hold in the case of the next ten, twenty, or fifty individuals that are born. Such a number is so small as hardly to admit of the operation of what is called the *law of average*. When a large number of lives is taken, those that exceed the medium term are balanced by those that fall short of it; but when the number is small, there is comparatively little room for the principle of compensation, and the result cannot, therefore, be depended upon. It is found, by the experience of all countries in which censuses of the population have been taken with considerable accuracy, that the number of male children born is to that of female children in the proportion nearly of twenty-two to twenty-one. But unless the observations be made on a very large scale, this result will not be obtained. If we look at particular families, they sometimes consist wholly of boys, and sometimes wholly of girls; and it is not possible that the boys can be to the girls of a single family in the ratio of twenty-two to twenty-one. But when, instead of confining our observations to particular families or even parishes, we extend them so as to embrace a population of 500,000, these discrepancies disappear, and we find that there is invariably a small excess in the number of males born over the females. The false inferences that have been drawn from the doctrine of chances, have uniformly, almost, proceeded from generalising too rapidly, or from deducing a rate of probability from such a number of instances as do not give a fair average. But when the instances on which we found our conclusions are sufficiently numerous, it is seen that the most anomalous events, such as suicides, deaths by accidents, the number of letters put into the post-office without any address, &c., form pretty regular series, and consequently admit of being estimated *à priori*. The business of insurance is founded upon the principles thus briefly stated. Suppose it has been remarked that of *forty* ships, of the ordinary degree of sea-worthiness, employed in a given trade, one is annually cast away, the probability of loss will plainly be equal to one *fortieth*. And if an individual wish to insure a ship, or the cargo on board a ship, engaged in this trade, he ought to pay a *premium* equal to the one-fortieth part of the sum he insures, exclusive of such an additional sum as may be required to indemnify the insurer for his trouble, and to leave him a fair profit. If the premium exceed this sum, the insurer is overpaid; and if it fall below it, he is underpaid. Insurances are effected sometimes by societies, and sometimes by individuals, the risk being in either case divided amongst a number of persons. Companies formed for carrying on the business have generally a large subscribed capital, or such a number of proprietors as enables them to raise, without difficulty, whatever sums may at any time be required to make good losses. Societies of this sort do not limit their risks to small sums; that is, they do not often refuse to insure a large sum upon a ship, a house, or a life, &c. The magnitude of their capitals affords them the means of easily defraying a heavy loss; and their premiums being proportioned to their risks, their profit is, at an average, independent of such contingencies. Individuals, it is plain, could not act in this way, unless they were possessed of very large capitals; and besides, the taking of large risks would render the business so hazardous, that few would be disposed to engage in it. Instead, therefore, of insuring a large sum, as £20,000 upon a single ship, a private underwriter or merchant will not, probably, in ordinary cases, take a greater risk than £200 or £500; so that, though his engagements may, when added together, amount to £20,000, they will be diffused over from forty to a hundred ships; and supposing one or two ships to be lost, the loss would not impair his capital, and would only lessen his profits. Hence it is that while one transaction only may be required in getting a ship insured by a company, twenty or thirty separate transactions may be required to get the same thing done at Lloyd's, or by private individuals. When conducted in this cautious manner, the business of insurance is as safe a line of speculation as any in which individuals can engage. To establish a policy of insurance on a fair foundation, or in such a way that the premiums paid by the insured shall exactly balance the sums paid by the insurers, and the various necessary expenses to which they are put, including, of course the profit, it is necessary, as previously remarked, that the experience of the risks should be pretty extensive. It is not, however, at all necessary, that either party should inquire into the circumstances that lead to those events that are most commonly made the subject of insurance. Such a research would, indeed, be entirely fruitless: we are, and must necessarily continue to be, wholly ignorant of the causes of their occurrence."

Marine Insurance.—The advantages resulting to commerce and navigation from marine insurance are immense. "Without the aid that it affords, (says Macculloch) comparatively few individuals would be found disposed to expose their property to the risk of long and hazardous voyages; but by its means insecurity is changed for security, and the capital of the merchant whose ships are dispersed over every sea, and exposed to all the perils of the ocean, is as secure as that of the agriculturist. He can combine his measures and arrange his plans as if they could no longer be affected by accident. The chances of shipwreck, or of loss by unforeseen occurrences, enter not into his calculations. He has purchased an exemption from the effects of such casualties; and applies himself to the prosecution of his business with that confidence and energy which nothing but a feeling of security can inspire. Besides insuring against the perils of the sea, and losses arising from accidents caused by the operation of natural causes, it is common to insure against enemies, pirates, thieves, and even the fraud, or, as it is technically termed, *barratry*, of the master. The risk arising from these sources of casualty being extremely fluctuating and various, it is not easy to estimate it with any considerable degree of accuracy; and nothing more than a rough average can, in most cases, be looked for. In time of war, the fluctuations in the rates of insurance are particularly great: and the intelligence that an enemy's squadron, or even a single privateer, is cruising in the course which the ships bound to or returning from any given port usually follow, causes an instantaneous rise in the premium. The appointment of convoys for the protection of trade during war, necessarily tends, by lessening the chances of capture, to lessen the premium on insurance. Still, however, the risk in such periods is, in most cases, very considerable; and as it is liable to change very suddenly, great caution is required on the part of the underwriters."

The first remarkable peculiarity in Marine insurance is, that while Fire and Life Insurances are usually effected by companies, Marine risks are commonly guaranteed by individuals. London and Liverpool are the only towns in England in which public companies exist for protecting property exposed to the perils of the seas. It has been asserted, that the comparatively small amount of business done by the Marine companies offers a fair argument that individuals are better adapted to insure sea risks than societies. A little consideration, however, will prove this inference to be incorrect; since a well-constituted company must certainly possess larger means than any single individual, for offering a sufficient guarantee to the insured, and must likewise afford greater facilities in making the contracts, and in promptly liquidating the contingent claims. The mode of conducting the business of Marine Insurance, both by individuals, and companies, in London, is as follows:—

The individual underwriters meet in a subscription room at Lloyd's. The joint affairs of the subscribers to these rooms are managed by a committee chosen by the subscribers. Agents are appointed in all the principal ports of the world, who forward, regularly to Lloyd's, accounts of the departures from and arrivals at their ports, as well as of losses and other casualties; and, in general, all such information as may be supposed of importance towards guiding the judgments of the underwriters. These accounts are regularly filed, and are accessible to all the subscribers. The principal arrivals and losses are, besides, posted in two books, placed in two conspicuous parts of the room; and also in another book, which is placed in an adjoining room, for the use of the public at large. Many of the merchants of the city of London are subscribers to these rooms; and the two old companies contribute each £100 per annum, in return for which they are furnished with copies of the daily intelligence. The rooms are open from 10 o'clock in the morning till 5 o'clock in the afternoon, but the most considerable part of the business is transacted between 1 and 4. Those merchants and ship owners who manage their own insurance business, procure blank policies at the government office, or of their stationers, which they fill up so as to meet the particular object in view, and submit them to those underwriters with whom they are connected; by whom they are subscribed or rejected. Each policy is handed about in this way until the amount required is complete. The premium is not paid to the underwriter in ready money, but is passed to account. Nor does the underwriter debit the account of the person to whom he subscribes a policy, with the whole amount of the premium, but with the premium less five per cent. Whenever losses occur which more than absorb the premiums on any one account, the underwriter is called upon to pay the balance. But should the underwriter's account be what is called good, that is, should the premiums exceed the claims, he sends round during the spring and summer, to collect from his various debtors either the balance of his last year's account, or money on account, according to his judgment; but, upon what he receives, he makes an allowance of twelve per cent. Many merchants and ship owners do not transact their own insurance business. They give their orders for insurance to others, who undertake it for them, and are responsible for its proper management. These latter persons are called insurance brokers; and some of them manage the business of a number of principals. To them, likewise, are transmitted the orders for insurance from the outports and manufacturing towns. They charge the whole premium to their principals, and their profit consists in 5 per cent. upon the premium, 12 per cent. upon the money that they pay to the underwriters, and ½ per cent. that they deduct from all the claims which they recover from the underwriters. It will at once be seen, that the trouble of effecting insurances at Lloyd's is considerable; that a good deal of time must be consumed; and that merchants and ship owners, therefore, have great inducement to consign their insurance business to brokers. But where the business is transacted with a company, this inducement, if not destroyed altogether, is, at all events, very much diminished. Any party having property to insure, has merely to go to the manager of the company, and state the particulars of the risk to be insured; the premium being agreed upon, the manager writes out a memorandum for the policy, which the party signs, and he is thus effectually insured. The companies procure the stamp and write out the policy, which is ready for delivery in four or five days. The companies, like the underwriters, charge the premium less 5 per cent. In other respects they vary. The Royal Exchange Assurance company allow 12 per cent. upon the profitable balance of each year's premiums, with credit till March for the premiums of the preceding year, and 5 per cent. for prompt payment. The Alliance Marine Assurance company allow 12 per cent. upon the profitable balance of each year's premiums, with credit till March; or 10 per cent. for prompt payment. The Indemnity Mutual Marine Assurance company allow 12 per cent. upon the profitable balance of each year's premiums, with credit till June; or 10 per cent. for prompt payment. The allowances of the London Assurance company are the same as those of the Indemnity. Losses are paid at all the offices promptly, and without deduction. A month's credit is allowed to the underwriters; and another month, and sometimes two months, are given to the broker, to collect from the underwriters, and pay over to his principals.

Marine Insurance guarantees no protection from losses arising from the acts of our own government; from any and every breach of the revenue laws; from breaches of the laws of nations; from the consequences of deviation from the understood time and course of sailing; from the sea-unworthiness of the vessel; or from unusual protraction of the voyage. Another description of loss against which the insured are not protected, is described in the following clause of the policy:—"Corn, fish, salt, seed, flour, and fruit, are warranted free from average, unless general, or the ship be stranded; sugar, tobacco, hemp, flax, hides, and skins, are warranted free from average, under 5 per cent., unless general, or the ship be stranded; and all other goods, also the ship and freight, are warranted free from average under 3 per cent., unless general, or the ship be stranded." Average is a name applied to certain descriptions of loss, to which the merchant and ship owner are liable. There are two kinds of average, general and particular. General Average comprehends all loss arising out of a voluntary sacrifice of a part of either vessel or cargo, made by the captain for the benefit of the whole. Thus, if a captain throw part of his cargo overboard, cut from an anchor and cable, or cut away his masts, the loss so sustained, being voluntarily submitted to for the benefit of the whole, is distributed over the value of the whole ship and cargo, and is called "general average." Particular Average comprehends all loss occasioned to ship, freight, and cargo, which is not of so serious a nature as to debar them from reaching their port of destination, and when the damage to the ship is not so extensive as to render her unworthy of repair. Losses where the goods are saved, but in such a state as to be unfit to forward to their port of destination, and where the ship is rendered unfit to repair, are called "partial or salvage loss." The leading distinction between particular average and salvage loss is, that, in the first, the property insured remains the property of the assured—the damage sustained, or part thereof, as the case may be, and as will be hereafter explained, being made good by the insurer; and in the second, the property insured is abandoned to the insurer, and the value insured claimed from him, he retaining the property so abandoned, or its value.

The losses for which compensation is guaranteed are thus stated in the form of policy executed at Lloyd's:—"Touching the adventures and perils which we, the assurers, are contented to bear, and do take upon us in this voyage: they are of the seas, men of war, fire, enemies, pirates, rovers, thieves, jettisons, letters of mart and countermart, surprisals, takings at sea, arrests, restraints, and detainments of all kings, princes and people, of what nation, condition or quality soever, barratry (*illegal or dishonest conduct*) of the master and mariners, and of all other perils, losses and misfortunes, that have or shall come to the hurt, detriment or damage of the said goods, and merchandizes, and ship, &c., or any part thereof; offences against the *revenue* of the United Kingdom of Great Britain excepted."

We must pass over the minor details of Marine Insurance, and proceed to the second branch of our subject,—Fire Insurance.

Fire Insurance is a contract of indemnity by which the insurer, in consideration of a certain premium received by him, either in a gross sum or by annual payments, undertakes to indemnify the insured against all loss or damage he may sustain in his houses or other buildings, stock, goods, and merchandise, by fire, during a specified period. Insurances against fire are hardly ever made by individuals, but almost always by joint stock companies, of which there are several in all the considerable towns throughout the empire. Of these, the Sun, the Phœnix, the British, &c. insure at their own risk and for their own profit, but there are others, which are called *contribution societies*, in which every person insured becomes a member or proprietor, and participates in the profit or loss of the concern. The Hand in Hand, Westminster, &c. are of this description. The conditions on which the different offices insure are contained in their *proposals*, which are printed on the back of every policy; and it is in most instances expressly conditioned, that they undertake to pay the loss, not exceeding the sum insured, "*according to the exact tenor of their printed proposals*." Nothing can be recovered from the insurers, in the event of loss, unless the party insuring had an interest or property in the thing insured at the time when the insurance was effected, and when the loss happened. It often occurs that no one office will insure to the full amount required by an individual who has a large property, and in such a case the party, to cover his whole interest, is obliged to insure at different offices. But, in order to prevent the frauds that might be practised by insuring the full value in various offices, there is, in the proposals issued by all the companies, an article which declares, that persons insuring must give notice of any other insurance made elsewhere upon the same houses or goods, that the same may be specified and allowed by indorsement on the policy, in order that each office may bear its rateable proportion of any loss that may happen: and unless such notice be given of such insurance to the office where another insurance is made on the same effects, the insurance made without such notice will be void. Any trustee, mortgagee, reversioner, factor, or agent, has sufficient interest in the goods under his custody, to effect a policy of insurance, provided the nature of such property be distinctly specified at the time of executing such policy. Most of the offices except in their proposals against making good any loss occasioned by "invasion," "foreign enemy," "civil commotions," &c.; and under this condition the Sun Fire Office was exonerated from the loss occasioned by the disgraceful proceedings of the mob in 1780. The risk commences in general from the *signing* of the policy, unless there be some other time specified. Policies of insurance may be annual, or for a term of years at an annual premium; and it is usual for the office, by way of indulgence, to allow *fifteen* days after each year for the payment of the premium for the next year in *succession*; and provided the premium be paid within that time, the insured is considered as within the protection of the office. Insurances are generally divided into *common*, *hazardous*, and *doubly hazardous*. The distinguishing characteristics of these may be learned from the subjoined proposals of the Sun Fire Office. The charge for insuring property of the first description is now usually 1s. 6d. per cent., the second 2s. 6d., and the third 4s. 6d. These charges are exclusive of the duty payable to government, of 1s. on the policy, and 3s. per cent. on the sum in the policy.

The details of Fire Insurance are so generally known, that it is unnecessary to extend this article by stating them at greater length.

Under the articles *Annuity*, and *Expectation of Life*, will be found all that is necessary to explain the elements of *Life Assurance;* in this place, therefore we shall do little more than treat of the insurance of sums payable at the death of the insurers or their nominees.

Life Insurance. Suppose an individual of a given age wishes to insure £100 payable at his death, the single premium, or the series of annual premiums, he ought to pay an office for such insurance, must plainly depend on the expectation of life of such individual, and on the rate of interest or nett profit which the insurers may make by investing the premiums. With respect to the first of these conditions, or the *expectation of life*, it is usual in estimating it to have recourse to Tables framed from the mortality observed to take place in particular cities or districts; but though the actual decrement and expectation of life among an average population, at *every year* of their lives, were accurately determined, it is doubted whether it would form a fair basis for an insurance office to proceed upon; for insurance offices invariably profess to act on the principle of rejecting bad lives, or of making them pay a proportional increase of premium; and it may besides, be fairly presumed that persons insuring their lives are of a superior class, and are not, generally speaking, engaged in those manual and laborious occupations that are esteemed most injurious to health. But, on the other hand, the friends of parties whose lives are supposed to be bad, and the parties themselves, are most anxious they should be insured. And since the competition among the different offices became so very keen, as it has been of late years, there are but few lives so bad that they will not be taken by one office or another; and we doubt, were the results of their experience made public, whether it would be found that there is such foundation for the opinion as to the superiority of insured lives. With respect to the second condition in valuing an insurance, or the rate at which the interest of money may be estimated, it is impossible to arrive at any thing like accurate conclusions. At an average, perhaps, transactions in life insurance may extend over a period of thirty years from the time when they are entered into; and in such a lengthened term the greatest changes may take place in the rate of profit and the rate of interest. Mr Finlaison, of the national debt office, appears to think that 4½ per cent. may be taken as the true average rate in this country; and that 4½ is a rate at which no loss need be apprehended. But this is not a point on which previous experience can be safely depended upon in forming engagements for the future; and there are grounds for concluding that no institution, intended to last for the next half century, would be warranted in reckoning upon realizing more than 3 per cent. upon its investments. Security being the principal object to be aimed at by every insurance office established on sound principles, they would not act wisely, if they did not calculate their premiums considerably higher than may appear necessary to those who look only at what has taken place during the last thirty or forty years. Societies contracting prospective engagements that may extend for half a century or more, are exposed to innumerable unforeseen contingencies; and they would be highly censurable, and altogether unworthy of the public confidence, were they so to conduct their affairs, that they might be liable to serious embarrassments from fluctuations in the rate of interest, or an increase of sickness, or any other cause.

Life insurance companies are divided into three classes. The first class consists of joint stock companies, who undertake to pay *fixed* sums upon the death of the individuals insuring with them; the profits made by such companies being wholly divided among the proprietors. Of this class are the Royal Exchange, the Sun, the Globe, &c. The second class are also joint stock companies, with proprietary bodies; but instead of undertaking, like the former, to pay certain specified sums upon the death of the insured, they allow the latter to participate to a certain extent, along with the proprietors, in the profits made by the business. The mode in which this sort of *mixed* companies allot the profit granted to the insured, is not the same in all; and in some, the principle on which the allotment is made is not disclosed. The Rock, Alliance, Guardian, Atlas, &c. belong to this mixed class. The third species of company is that which is formed on the basis of mutual insurance. In this sort of company there is no proprietary body distinct from the insured; the latter share among themselves the whole profits of the concern, after deducting the expenses of management. The Equitable Society, the Amicable, the Norwich Life, &c. belong to this class.

Our limits will not permit us to copy into our pages the terms and regulations of the various Life Assurance Companies now existing; and indeed it is unnecessary to do it, for each society is careful to keep the public mind informed, by advertisements and published reports, on these points. From the great success, however, which has attended the *Scottish Equitable Life Assurance Society*, which is founded on the plan, or nearly so, of the London Equitable, we deem it proper to lay before the reader some slight notice of its nature and operations.

The Scottish Equitable Life Assurance Society is formed upon principles calculated to afford the greatest possible benefits to the assured. It is a Mutual Assurance Society, in which the whole profits belong to, and are periodically divisible amongst, the assured. In this respect, it differs essentially from a proprietary company. In the latter, the profits are in some cases wholly, and in others partly, divided amongst the proprietors, who, as partners, have nothing in common with those who effect assurance with the company. When the lives are carefully selected, and the revenues prudently invested, experience has demonstrated that those profits are greatly beyond what is understood by such as are not intimately conversant with the subject. The numerous Proprietary Life Companies which have arisen,—the exertions made by them to procure business,—the dividends they have been enabled to pay to the proprietors,—and the value of their stock, demonstrate the extent of their profits. Any healthy person, therefore, who finds it expedient to have his life assured, and who resorts to a Proprietary Company, just gives away his share of profits, and he does so without any corresponding advantage whatsoever. For though Proprietary Companies hold it out as an inducement to join them, that they secure to the assured the sum specified in the policy, whether profit be made or not, this is merely a nominal advantage, the fact being, that in every established life office, large profits have arisen. Such has been the result, partly because human life is ascertained to be of much greater duration than is assumed in those calculations, on which all well-conducted life institutions have cautiously and very properly proceeded, and partly because money can, by transactions in redeemable annuity, and otherwise, be improved to greater advantage, than the rate of interest assumed in such calculations. No Proprietary Company, therefore, can possibly afford so great advantages as Mutual Assurance Societies do; for such societies, by dividing the whole profits amongst the policy holders, assure the greatest possible sum at the lowest possible rate. In other words, they assure at prime cost. Accordingly, if it be said of any Mutual Assurance Society, that its rates are too high, it is an obvious answer, that, granting they are so, it does not form a good reason for joining a Proprietary Company in preference to such a society, because all moneys beyond what are absolutely indispensable for securing payment of the sums assured, are returned or compensated to the contributors, either by corresponding additions to the sums specified in the policies, or by making a corresponding diminution of the future annual contributions or premiums. The great practical effect, in short, of the premiums being somewhat beyond the risk, is to create an additional guarantee for the stability of the institution.

The London Equitable, on the principle of which the Scottish Equitable was instituted, is well known throughout the empire, and the profits which it has divided, are familiar to every one acquainted with life assurance. In some cases, the bonuses or divisions of profit have extended to more than four times the sum assured,—an immense advantage, the whole or the greater portion of which would have been lost to its members, had they resorted to Proprietary Companies.

The premiums or contributions required by the Scottish Equitable are somewhat lower than those of the London Equitable. It is not, however, on the lowness of the premiums required, that the Scottish Equitable Life Assurance Society puts forth and rests its claim to support. As has already been said, it is of small, or rather it is of no importance to the members of a Mutual Assurance Society, that the premiums or contributions are somewhat more than adequate to the payment of the sums assured, seeing that to the members alone, all the surplus is appropriated. The claim of the society to a decided preference, therefore, is founded on the irrefragable fact, that from the very nature of the institution as it stands, no company, on a different principle, can warrantably offer to the Assured so great advantages as it does.

The recent alteration on the law of the society, introduces triennial in place of septennial investigations, and a more equitable allocation of the profits.

The annexed tables exhibit the progress of the Society from its commencement, and the premiums on which policies are granted:—

View of the Progress and Situation of the Society since its Institution.

	Amount Assured.	Annual Revenue.	Accumulated Fund.
At 1st March 1833.	£364,884	£[illegible]	£[illegible]
Do. 1836.	[illegible],611	11,[illegible]	[illegible]
Do. 1837.	740,460	26,[illegible]	[illegible]
Do. 1839.	1,019,580	37,[illegible]	[illegible]

Premiums for Assurances on Single Lives for the Whole Period of Life.

Age.	Premium.	Age.	Premium.	Age.	Premium.
	£ s. d.		£ s. d.		£ s. d.
14	1 15 5	30	2 11 1	46	[illegible]
15	1 16 5	31	2 12 3	47	[illegible]
16	1 17 6	32	2 13 6	48	[illegible]
17	1 18 6	33	2 14 9	49	[illegible]
18	1 19 7	34	2 16 1	50	[illegible]
19	2 0 7	35	2 17 6	51	[illegible]
20	2 1 6	36	2 19 0	52	[illegible]
21	2 2 5	37	3 0 6	53	[illegible]
22	2 3 3	38	3 2 3	54	[illegible]
23	2 4 1	39	3 3 9	55	[illegible]
24	2 4 11	40	3 5 6	56	[illegible]
25	2 5 10	41	3 7 5	57	[illegible]
26	2 6 10	42	3 9 3	58	[illegible]
27	2 7 10	43	3 11 3	59	[illegible]
28	2 8 11	44	3 13 4	60	[illegible]
29	2 10 0	45	3 15 6		

These premiums are payable yearly; or, at the option of the assured, they may be made payable half-yearly, with a slight increase of the rate.

We conclude this article with an extract from an able paper on Mutual Assurance Societies, which appeared in Chambers' Edinburgh Journal of 23d March, 1839.

"Although there are about sixty Life Assurance Companies and Societies in the kingdom, all of which are constantly making strenuous efforts to attract public attention to the peculiar advantages which they have to offer, it is a fact not less true than surprising, that the number of individuals who have availed themselves of life-assurance in the United Kingdom of Great Britain and Ireland is not much above eighty thousand. Allowing twenty-five millions to be the population of the empire, and five persons to be the number of each family, it would thus appear that not more than *one* head of a family out of sixty-two has adopted this means of providing for the helpless beings whom he may leave behind him. If there were other means in abundance of providing for widows and fatherless children, we might be little surprised at this calculation; but when we consider that the case is quite the reverse—that few fathers have property wherewith to provide for a surviving family, that the number connected with the institutions which allow pensions to widows is necessarily small—when we consider, in short, that the great majority of men who have wives and children have nothing but an income depending on their own life and exertions between their families and want—we cannot but conclude that the expedient of life-assurance is either unknown to a large portion of society, or knowingly neglected by them. In either case, a short paper explaining the subject, and enforcing its claims on the attention of husbands and fathers, may be expected to prove in some degree useful.

"Down to a comparatively recent period, life assurance was chiefly conducted on the ordinary principles of a mercantile speculation. A company, possessing a large capital, assured sums payable on the deaths of parties, at certain rates, calculating on a profit from their transactions. The *sole* advantage of this plan lay in the guarantee afforded by the capital of the company. It has since been found that, by the plan of mutual assurance, all desirable security is afforded, while the profits are divisible among the only parties who have any right to them, the assurers. Mutual *Assurance* Societies are, therefore, rapidly supplanting Assurance Companies, most of which will probably in a few years cease to exist. In the present paper we propose to confine our attention to the plan of mutual assurance.

"Mutual assurance proceeds on the following simple principles. While it is an indubitable fact, that nothing is more precarious than the life of an individual, seeing that a thousand dangers constantly beset him, it is an equally certain fact, that if we take so large a number as ten thousand persons, or even a smaller number, it is possible to say with almost unerring certainty how many of these will die during the next ensuing year, how many in the next again, and so on, until, at about the age of a hundred, not one person remains. Thus Dr Price of Northampton took 11,650 individuals, whose births and deaths were recorded in the proper books at that town, and found that in the first year 3000 died, in the second, 1367, in the third, 502, in the fourth 335, in the fifth 197, and so on till the last man died at ninety-six. Dr Price consequently assumed that, of any 11,650 individuals who existed in the like circumstances, 3000 would die in the first year, 1367 in the second, and so on. It will be observed that the whole number who die in the first five years is 5401, leaving 6249 then alive: consequently, any one of the 11,650 children, at the moment of birth, had a chance of living five years equal to the proportion which 6249 bears to 5401, or somewhat more than a half. No man could say, at the moment, that any one of these babies would continue to live for three seconds; but yet it was possible to say with some degree of probability that, in the proper circumstances, 6249 of the whole number would live to the commencement of the sixth year. When we go on to an age at which life assurance is more likely to be effected—say 52—we find that, of 100,000 persons who complete this portion of existence, 3044 will die before the end of the ensuing twelvemonth, so that each man's chance of dying in that space of time is in the proportion of 3044 to 100,000, or about three to a hundred. Now, supposing that these 100,000 persons were each desirous of insuring the payment of £100 to his heirs in the event of his dying during this year, it is evident that if they deposit a sum equal to 3044 times £100, that is, £304,400, or about £3 0s. 10½d. each, they will form a fund sufficient for this purpose, leaving nothing over. We have only to suppose a set of persons of different ages depositing each the sum appropriate to his age, and continuing to do so as long as he lives, and we then have the idea of a Mutual Assurance Society in all except *this*—that, generally, instead of paying an increasing sum each successive year, proportioned to the increased risk, it is common to strike a medium in the probable future payments, and pay that from the beginning. Thus, in point of fact, the sum usually required for the assurance of £100 at death, from individuals aged fifty-two, is nearly £5.

"While Mutual Assurance Societies are founded upon this basis, they take, from circumstances, another character in addition to that which they hold out to the public. It may readily be conceived that the calculations of the probable duration of lives are liable to be modified by certain contingencies. From climate, and modes of living, there is more health and better expectation of life in some countries than in others. Even in the same country, from improvements of various kinds, the ratio of deaths to the amount of the living inhabitants may be experiencing diminution, so that a man of thirty has the chance of living several years longer than his grandfather had at the same age. In this country, the annual mortality is considerably less in proportion than it was sixty years ago. Consequently, the calculations of Dr Price, forming what are called the Northampton Tables, and which are above adverted to, although they were formed amongst a comparatively healthy rural population, are no longer strictly true. They calculate the chance of life at each particular age too low, and dictate the taking of a too high premium for assurance; in other words, a man at fifty-two, has not in reality a chance of death in the next year equal to the proportion of 3044 to 100,000, but something less, and he should therefore pay less than £3, 0s. 10½d. to assure £100 for a year. Nevertheless, the most of Mutual Assurance Societies, such as the Equitable of London, and the Scottish Widows' Fund and Scottish Equitable in Edinburgh, proceed upon the Northampton calculations—but for a reason which must be generally approved of. By this plan a considerable surplus takes place, which, at certain intervals, is reckoned, divided, and added to the standing policies, or sums assured, in their respective proportions. It must be evident that this plan, while it adds to the security of the Society, will be perfectly just to all parties, if the divisions of the surplus do not take place at such wide intervals as to leave many policies of short currency unbenefited. The society last mentioned (Scottish Equitable) appears to us to make this justice most certain, as it divides the surplus triennially, being the shortest interval in practice. Now, what is the general result of this adherence to a large calculation of mortality, but that Mutual Assurance Societies become also, as it were, banks for savings? The money deposited there, is not, strictly speaking, parted with. It is put into a stock, where it is sure of being invested to the best advantage—presuming the managers to be honourable and expert men. If the individual die before his proper time, a much larger sum is drawn out by his representatives. If, on the contrary, he live beyond the average, and make payments beyond the amount of the sum originally assured, still, in the long-run, when he dies, his heirs get *not alone that sum*, but *something more*, in proportion to the excess of his payments and the profits made by the investment of the Society's funds, lessened only by his contingent for the expences of the Society. In many cases, where a policy was of moderately long standing, it has been found that the sum originally assured has been doubled, or more than doubled, while the premium, or annual sum paid for assurance, had of course sustained no increase.

"Such being the equitable and beneficial principles on which Mutual Assurance Societies are established, it is clear that they present, to men in the enjoyment of income, but possessing little property, a most suitable and favourable means of providing in a greater or less measure for the endeared and helpless relatives who may survive them. That only about 80,000 persons in the united kingdom should have taken advantage of Life Assurance, being but one in sixty-two of the supposed number of heads of families, surely affords a striking view of—shall we call it the improvidence of mankind, or shall we not rather designate it as their culpable selfishness? For what is the predicament of that man who, for the gratification of his affections, surrounds himself with a wife and children, and peaceably lives in the enjoyment of these precious blessings, with the knowledge that, ere three moments at any time shall have passed, the cessation of his existence may throw wife and children together into a state of destitution? When the case is fully reflected upon, it must certainly appear as one of extremely gross selfishness, notwithstanding that the world has not been accustomed to regard it in that light. If, indeed, it were utterly impossible to provide for a widow and orphans, no fault could fairly be found. And, no doubt, the little blame bestowed by the world on this account is owing to the fact, that, till a recent period, no means of providing for these relatives existed. They were in those days invariably left to the mercy of the public. But that this occasioned many evils we may be abundantly satisfied, from the earnestness with which the founders of Christianity press the duty of succouring the widow and fatherless—one of them representing religion as almost entirely consisting in that benevolent action alone. Assuredly, if there had not been much misery from this cause, there would have been no need for so much urgency on the subject. But if we only consider for a moment how mainly every one is engaged in providing for himself, we must be satisfied of the extreme precariousness of any provision which is expected to come from parties not responsible. It is therefore the duty of every man to provide, while he yet lives, for his own: we would say that it is not more his duty to provide for their daily bread during his life, than it is to provide, as far as he can, against their being left penniless in the event of his death. Indeed, between these two duties there is no essential distinction, for Life Assurance makes the one as much a matter of current expenditure as the other. One part of his income can now be devoted by a head of a family to the necessities of the present; another may be stored up, by means of Life Assurance, to provide against the future. And thus he may be said to do the whole of his duty towards his family, instead of, as is generally the case, only doing the half of it.

"It may be felt by many, that, admitting the duty in full, their income is nevertheless insufficient to enable them to spare even the small sum necessary as an annual Premium for Life Assurance. The necessities of the present are in their case so great, that they do not see how they can afford it. We believe there can be no obstacle which is apt to appear more real than this, where an income is at all limited; and yet it is easy to show that no obstacle could be more ideal. It will readily be acknowledged by every body who has an income at all, that there must be some who have smaller incomes. Say, for instance, that any man has £400 per annum; he cannot doubt that there are some who have only £350. Now, if these persons live on £350, why may not he do so too, sparing the odd £50 as a deposit for Life Assurance? In like manner, he who has £200 may live as men do who have only £175, and devote the remaining £25 to have a sum assured upon his life; and so on. It may require an effort to accomplish this, but is not the object worthy of an effort? And can any man be held as honest, or any one good, who will not make such an effort, rather than be always liable to the risk of leaving in beggary the beings whom he most cherishes on earth, and for whose support he alone is responsible? It may perhaps be thought that we feel strongly on the subject: we own that we do; but if the generality of men saw the case in its true light, they would feel as strongly as we do. They are only comparatively indifferent, because there has as yet been but a brief experience of a system for rescuing widows and orphans from poverty. When Life Assurance is as universally understood and practised as it ought to be, he who has not done such a provision, or something equivalent, for the possibility of his death, will, we verily trust, be looked on as a not less detestable monster than he who will not work for his children's bread, and his memory after death will be held in just contempt."

IPSWICH; a borough-town in the county of Suffolk, England, sixty-nine miles N.E. from London. It stands on the banks of the river Orwell, just below its junction with the Gipping, from which the town derives its appellation, as in Domesday-book it is called Gyppeswiz, or Gyppeswic, since altered to Ipswich. It was anciently fortified and encompassed by a ditch and rampart, which were partially destroyed by the Danes, who took and pillaged the place in 991, and again in 1000. A castle is said to have been erected here by William the Conqueror, which was demolished by king Stephen; but the fortifications were renewed in the fifth year of John, when a wall was built round the town, with four gates, denominated from the four cardinal points of the compass, and of this wall a portion is still remaining. The first charter of incorporation was granted to the inhabitants in 1199, by king John; but Edward I. in the thirteenth year of his reign, deprived them of their franchises, which, however, on their subsequently furnishing ships for his service, he restored, and in 1291 granted a new charter, confirming those of John and Henry III. Other charters were granted by succeeding princes, the last being that of Charles II.

The streets of Ipswich are irregularly formed but well paved and lighted with gas. The houses are mostly of ancient date, but have a handsome appearance. Amongst the public buildings worthy of notice, are the town-hall, county-gaol, and house of correction. The free grammar school was founded previous to the reign of Henry VIII. There are likewise several charity schools, and numerous almshouses, besides an institution for the widows and orphans of poor clergymen.

A philosophical society was established in 1818, and, besides a library for the use of the free burgesses, there are a public subscription library, news-rooms, mechanics' institution with library and museum, and a horticultural society. The chief trade of the place consists in the spinning of woollen yarn, in sail-making, and ship-building. The commerce is principally confined to the exportation of corn, malt, cheese and butter, and the importation of timber. Ipswich returns two members to parliament. Population in 1831, 20,454.

IRELAND, Geology of.* (*a.*) Though the geological structure of Ireland is similar to that of England, still the relative geographical position of the various rocks is essentially different. In England the mountain ranges, consisting of the primary and transition classes, are situated near the west coast, and the newer strata are successively accumulated on each other to the east and south, in which directions the country is comparatively flat. In Ireland, on the contrary, the coast is for the most part mountainous, while the interior is flat, and seldom presents hills of considerable elevation. Thus the primary mountains of Antrim, Derry, and Donegal occupy the north and north-west coasts; those of Sligo, Mayo, Galway, and Kerry, the west and south-west. The slate districts of Cork and Waterford form the south and south-east; while the mountains of Wicklow, Louth, and Down, are situated on the east coast.

These mountain-tracts rarely extend more than twenty miles inland; and we find the interior, with trifling exceptions, composed of flat or gently swelling grounds, covered by a rich and fruitful soil. This peculiar conformation of the surface has been the origin of the great number of rivers with which the coasts abound; they have their sources in the neighbouring mountains, whence they flow in short but rapid courses directly into the sea.

The Shannon forms the most striking example of the rivers of the interior, flowing slowly through the flat country. There are several other rivers which have their origin in the central districts, but they are insignificant in comparison with the Shannon. They all exhibit the same sluggish character, and, when the slow current of water is interrupted by any impediment, have the same tendency to flood the flat country, on either side, for a considerable extent.

By far the greater part of Ireland presents a formation of carboniferous or secondary limestone; but as the exceptions are chiefly confined to the coasts, it may be said that almost the whole of the centre of the country offers this feature. The principal exceptions are in the south-west, where coal prevails over the west of the counties Clare, Limerick, Kerry, and the principal part of Cork. In the south-east, graywacke slate extends along the coast from the middle of the county of Waterford nearly to Kingstown. The same slate is again found in the county Louth, and extends over parts of Cavan, Monaghan, Armagh, and Down. Then commences the tabular trap, which extends over the whole of Antrim and the eastern part of Londonderry. The remainder of the latter county, with the principal part of Donegal and Tyrone, presents a formation of mica slate, which also extends over the western parts of the counties of Mayo and Galway. The north-western extremity of Ireland consists almost entirely of granite and quartz. The latter formation is rarely found in any other part of the island; the former only in three districts to any extent. First, in a line running from Kingstown, in the county Dublin, across Wicklow and Carlow, to a short distance beyond the Barrow, separating in the first half of its course the bed of graywacke slate, and in the second dividing the secondary limestone from the slate. The second bed of granite unites the southern parts of the counties of Down and Armagh. The third extends over a considerable portion of the county Galway, westward of the town.

The characteristic feature of the limestone country is flatness, and the soil, with the exception of the boggy districts, is unusually fertile. In many parts most valuable quarries have been opened, and abundance of stone, of very large dimensions, can be procured for every architectural purpose. Beautiful marbles of various tints occur abundantly in different places, more particularly at Kilkenny, Limerick, Galway, Cork, King's County, Roscommon, and Armagh. In some of the schistose districts valuable beds of fine-grained roofing slate have been discovered and opened. The chief of these are situated in the county of Tipperary, on the banks of Lough Derg, on the Shannon; at Glenpatrick, south of the river Suir, in the county of Waterford; and at Valentia island, on the west coast of the county of Kerry. Good veins of slate also occur to the east of Strangford Lough, in the county of Down, in some parts of the counties of Armagh, Monaghan, in Wicklow, Wexford, and the south coast of Cork.

With respect to metallic mines, veins both of copper and lead have been discovered and partially worked in many of the primary slate districts of the counties of Donegal and Galway, and in the granite slate districts of the counties of Down, Armagh, Monaghan, Wicklow, Wexford, Waterford, Cork, and Kerry; also in different parts of the great central limestone district.

At present few of these mines are in operation. Among the copper-mines the most important are those of the vale of Ovoca, in the county of Wicklow, which yield from 10,200 to 12,800 tons a year, varying from £4 to £5 a ton; those of Bonmahon, in the county of Waterford, yielding from 4000 to 5000 tons, at £9 a ton; and those of Allihies, near Berehaven, in the county of Cork, producing from 6000 to 7000 tons at the same price. The two latter are highly productive, and give employment to a considerable number of miners and labourers. The remaining copper-mines are one near Cahirciveen, in the county of Kerry, and two near Cappawhite, in Tipperary, all opened since the commencement of 1837; and the Audley mine at Skibbereen, in the county of Cork.

The lead-mines of Ireland have not latterly been prosperous, and few are at present at work; the most extensive are those at Conlig mountain, near Newtownards, in the county of Down; of Derrynoose, in the county of Armagh; of Lugganure, in the county of Wicklow; and in the limestone district of the county of Clare, at Ballybicky, near Ennis. The quantities produced cannot be stated.

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* Abridged from the Report of the Irish Railway Commissioners.

In Ireland coal occurs in seven distinct localities, which have been called the Leinster; the Slieve Arda, or Tipperary; and the Munster districts, situated to the south of Dublin; the Monaghan, the Connaught, the Tyrone, and the Antrim, to the north of it. The coal consists of two distinct species, non-flaming coal or anthracite, and bituminous or blazing coal. The first, with the exception of two beds of trifling importance which occur in Antrim, are confined to the coal districts, situated to the south of Dublin, while the northern contains bituminous or blazing coal.

The Leinster Coal District is situated in the counties of Kilkenny, Carlow, and Queen's County. It contains seven workable beds of coal, arranged in regular succession, one above the other. The collieries have been worked for upwards of a century, and now produce annually about 120,000 tons of coal and culm. The former is used for domestic purposes and malting, the latter for burning lime. The upper beds, which are the purest, are now nearly exhausted; but three of the lower beds, which are very extensive, have never been worked.

The Slieve Arda, or Tipperary Coal District.—The general circumstances of this district are similar to those of the latter. It has, as far as is known, three beds of coal, the lowest nine inches, and the second and third two feet in thickness. The principal collieries are situated at Colebrook, and at Coolquil, in the neighbourhood of Killenaule. The line of the Main Southern Railway, as proposed by the commissioners, passes through the midst of the limestone valley, situated between the Slieve Bloom Mountain and the Leinster and Tipperary coal districts. It is probable that by a proper construction of the grate, the pure, though dense, non-flaming coal of these districts may be used with advantage for locomotive engines.

The Munster Coal District is perhaps the most extensive in the British empire; it occupies large portions of the counties of Clare, Limerick, Kerry, and Cork, and coal-mines have been partially worked in all those counties. The coal is usually of a slaty structure, much softer than that of Tipperary or Kilkenny, and is therefore almost exclusively used for burning lime. The principal collieries are situated on the north side of the river Blackwater; and at this moment extensive works are being carried on, particularly at Dromagh and Gurteen collieries, ten miles west of Mallow.

From the extent of coal already known in the southern part of this district, no doubts can be entertained of its capability of supplying the country for centuries to come with abundance of culm suitable for burning lime. This circumstance is of the utmost importance to the agriculturists of the south of Ireland, who find lime to be the best manure for raising crops, particularly wheat.

The Monaghan District.—In this locality the coal formation rests upon a small tract of carboniferous limestone, which is insulated in the central graywacke slate district. Hitherto, though many trials have been made, no coal worth working has been met with; only one bed of fourteen inches, one of a foot, and several of inferior thickness, have been discovered.

The Connaught Coal District is situated on the eastern side of Lough Allen, near the source of the river Shannon, and comprehends portions of the counties of Roscommon, Leitrim, and Sligo. It consists of a group of hills of considerable elevation. The coal occurs in detached basins near the summits of some of the hills: it has never been extensively wrought; and as there is only one workable bed, varying in thickness from two to three feet, it is not probable that many extensive collieries or manufactories will be established in this district. The Arigna iron-works, which are in it, and which are the only works of the kind in Ireland, have been lately at work, and cast-iron of excellent quality can be made there at a moderate expense. The coal, though thin, is well adapted for the smelting of iron; the iron-stone is peculiarly rich, and limestone is abundant in the neighbourhood.

The Tyrone Coal District, which is situated to the north of Dungannon, in the county of Tyrone, though very small, is much richer in valuable beds than any other in Ireland. At present [illegible] workable beds are known, varying from three to [illegible] feet in thickness. At Coal island six beds have been discovered and worked with various success during the last century; but the stratification of the district is so imperfect, and the consequent difficulty and expense of working the mines have been so great, that the adventurers have seldom obtained any considerable profit from them.

The Antrim Coal District is situated on the north coast of the county of Antrim, close to Fair Head, and occupies the country on both sides of that headland. The collieries have been wrought at a very remote period, but at present no coal is raised in the district, owing partly to the difficulty of working to the dip of the old excavations, and partly from the want of a safe harbour for shipping. At the same time it may be remarked that the extent of coal remaining unwrought must be considerable.

It will be perceived from the foregoing statements that Ireland contains abundance of [illegible] stone, marble, and slate quarries, many of which are at present in successful operation; and that the metallic mines now at work, though limited in number, are very prosperous; and, should the prices of copper and lead increase, much more extensive works will probably be undertaken. Of the bituminous coal-mines of the northern districts it may be said, that they are inferior both in productiveness and purity of coal to those of Great Britain; but that the anthracitous coal districts of the south are sufficiently extensive, and contain abundance of that coal, which, though less agreeable than the bituminous for domestic use, is most valuable in all cases where a strong and steady heat is required.

IRVING, Edward, late minister of the national Scotch church London, was born in the burgh of Annan, Dumfriesshire, on the [illegible] August, 1792. His father was a respectable tanner in that town, and became owner of a considerable portion of burgage and landed property in the vicinity. After receiving a good education in his native place, Edward was sent to the university of Edinburgh, and pursued his studies with great application. He excelled in the mathematics as to attract the attention of professor Leslie, who, on being applied to for a teacher, recommended him as the fittest person in his class to undertake the mathematical department in an academy at Haddington. At that time Mr Irving had not completed his seventeenth year. He occupied this situation only one year, when he was invited to one more lucrative in a larger establishment at Kirkaldy. At Kirkaldy he, besides, kept boarders, and gave private tuition. This situation he filled for nearly seven years, during which time he completed his probationary terms, and became a licentiate of the church of Scotland. It was here that he contracted the acquaintance of Miss Isabella Martin, daughter of the Rev. John Martin, one of the ministers of Kirkaldy. He engaged himself to this young lady, on the understanding that as soon as he had obtained a living they should be married; an engagement which he fulfilled shortly after he had obtained the living at Cross street, Hatton Garden. In 1819 Mr Irving removed to Edinburgh, uncertain what to do; he determined only to abide henceforth by preaching the gospel, as his true and sole vocation. Preaching one Sunday from the pulpit of Dr Andrew Thomson, of Edinburgh, unknown to him, Dr Chalmers was one of his auditors. It was the first time the Doctor had heard Mr Irving; and he then formed the favourable opinion of him that subsequently led to his appointing him his assistant and colleague in St John's church, Glasgow, During his ministry at that church, he had the offer of a call to a church in Kingston, Jamaica; which he would probably have accepted, but for the interference of his relations. He was also, during that period, offered a living in one of the collegiate churches in Scotland; but that he rejected, on the ground that it was the gift of the patron

It was in the year 1822 that Mr Irving became a resident in the British metropolis. At that period the Caledonian church, in London, had dwindled into insignificance; and the few families which considered themselves as belonging to it found some difficulty in keeping up the public worship statedly. Some person belonging to the denomination, happening to hear a favourable report of Mr Irving's pulpit talents, was induced to suggest to the proper authorities the propriety of endeavouring to prevail upon him to become a candidate for the then vacant pulpit in, what was termed, the Caledonian Asylum, a place of worship situated in Cross street, Hatton Garden. He accepted the invitation, and was introduced to public notice as the assistant of Dr Chalmers. Mr Irving's style and manner of preaching differed widely from every thing that was then to be found even in that immense metropolis. He soon attracted very large congregations by the force and eloquence of his discourses, and the singularity of his appearance and gesticulation. The greatest orators and statesmen of the day hurried to hear him; the seats of the chapel were crowded with the wealthy and the fashionable, and its doors were thronged with carriages. It became necessary to exclude the public in general, and to admit only those who were previously provided with tickets. The stranger who had effected an entrance found himself in a chapel of moderate dimensions, surrounded by the gay, the noble, and the intelligent of both sexes. When every part of the building had become densely and oppressively crowded, the preacher appeared—tall, athletic, and sallow; arrayed in the scanty robe of the Scotch divines, displaying a profusion of jet-black, glossy hair, reaching even to his shoulders, with a singular obliquity in one of his eyes, and a stern calm solemnity of aspect, somewhat debased by an expression indicative of austere and conscious sanctity. His strong northern accent added to his singularity; which was still further increased by his violent and ungraceful, but impressive, gesticulation. His phraseology was not the least remarkable trait; and was among the peculiarities which gave him *éclat* with the public. He expressed his ideas in the language of Milton, Hooker, and Jeremy Taylor. The circumstance of his meeting with Hooker's Ecclesiastical Polity, which it is said he did, when a boy, at a farm-house near his father's, was a memorable incident in his life; as it no doubt gave the peculiar bent and tone to his character, and contributed much to draw forth the powers of his mind. But his exertions were not restricted to his labours from the pulpit—he had scarcely been a year in the metropolis, when he came forth from the press, in an octavo volume of 600 pages, under the singular title of "For the oracles of God, Four Orations—for Judgment to come, an Argument, in nine parts." Such was the demand for this publication, that a third edition was called for in less than six months. It underwent, however, the ordeal of the most severe and extensive criticism.

In May, 1824, the London Missionary Society applied to Mr Irving to preach one of their anniversary sermons; to which request he consented. At an early period of the following year this sermon, filling one hundred and thirty large and closely printed pages, (independent of a dedication and preface, which occupy nearly thirty more,) was published, under the title of "For Missionaries after the Apostolic School, a Series of Orations, in four parts. I. The Doctrine. II. The Experiment. III. The Argument. IV. The Duty. By the Rev. Edward Irving, A.M." The volume was dedicated to Mr Coleridge the poet, with whom Mr Irving had recently formed an intimate acquaintance.

In 1825, Mr Irving preached the anniversary sermon for the continental society, the substance of which he afterwards published in a treatise on the prophecies of Daniel and the Apocalypse, entitled "Babylon and Infidelity foredoomed of God." This work he dedicated to Mr Hatley Frere, brother to the British envoy at the court of Madrid, and one of the noted students of prophecy of what is called the Albury school. In this dedication he acknowledges that until he fell in with Mr Frere, and had access to that gentleman's conversation and writings, the subject was quite new to him. It was about this time that he drew up his Introductory Essay to bishop Horne's Commentary on the Book of Psalms, published in Glasgow, and which appears to be generally considered as one of the choicest products of Mr Irving's pen. In the controversy which occurred among the numerous friends and supporters of the British and Foreign Bible Society, and which at one period threatened the very existence of the society, Mr Irving took an active part; and made himself somewhat conspicuous by a speech which he delivered at the anniversary meeting of the society in 1827. In the same year, he published "The Coming of the Messiah in Glory and Majesty, by Juan Josafat Ben Ezra, a converted Jew," translated from the Spanish. In 1828 Mr Irving preached a Fastday sermon before the presbytery of London, which he afterwards published under the title of an "Apology for the ancient Fulness and Purity of the Doctrine of the Kirk of Scotland." In the same year he contributed to an annual then existing under the name of the "Anniversary," an essay, entitled, "A Tale of the Times of the Martyrs." He also published a "Letter to the King on the Repeal of the Test and Corporation Acts," a measure which he earnestly opposed; and "Last Days, and Discourses on the evil Character of these Times."

It was about the year 1827 that he was first observed to speak in a totally new manner concerning the human nature of Jesus Christ. On the formation in the metropolis of a society for the distribution of "Gospel Tracts," Mr Irving consented to be one of three preachers appointed to preach collection-sermons in aid of the funds of the new institution; and it is said to have been on the delivery of his oration on that occasion that some of Mr Irving's hearers were astounded by his assertion of "the sinfulness of Christ's human nature." In 1828 issued from the press what may be termed his *chef-d œuvre*, his "Sermons, Lectures, and occasional Discourses," in three closely printed volumes, in octavo, in which his new discoveries in theology were developed at large.

In the spring of the year 1829 Mr Irving paid a visit to his friends in Scotland, and passed some weeks among them. At Edinburgh he commenced a course of "Lectures on the Book of the Revelation." His original calculation was to go through the whole book of the Apocalypse in twelve lectures; but, having completed that number, he found that he was little beyond the threshold of his undertaking. Having added three lectures, the fifteen were issued from the press in parts, the whole making four duodecimo volumes of nearly four hundred pages each, closely printed. About the middle of May, 1829, the annual meeting of the General Assembly of the Church of Scotland took place in Edinburgh; and Mr Irving was solicitous of obtaining a seat in that august assembly, and partaking in their deliberations. An application was consequently made to this effect; but it was rejected on the ground that his bearing the character of a regularly ordained clergyman disqualified him from officiating in that court as a ruling elder.

No complaint of Mr Irving's heterodoxy occurred in the proceedings of the General Assembly on the occasion just alluded to; but the time soon arrived when his obliquities of doctrinal sentiment could no longer be allowed to lie dormant. The subject was taken up by the presbytery of the Scotch Church, in London, in the early part of the year 1830. Mr Irving was charged with heresy; and at a meeting of the presbytery of London on the 29th of November, 1830, the report of the committee appointed to examine his work on Christ's humanity was brought up and read. It charged Mr Irving with holding Christ guilty of original and actual sin, and denying the doctrines of atonement, satisfaction, imputation, and substitution. These charges were substantiated by quotations from the work itself, and confronted with passages from the Scriptures, the Confession of Faith, and the Assembly's Catechism. It would be tedious to pursue the narrative of these proceedings in detail, from this period to the beginning of the year 1832, by which time Mr Irving's aberrations had multiplied tenfold—insomuch that the trustees of the National Scotch Church in Regent's square found it necessary to prefer charges against their minister, with a view of either reclaiming him from the error of his way, or deposing him from his official station as a minister of the Caledonian Church, in London. On the 2d of May, 1832, the London presbytery unanimously found him guilty. The consequence was that he became dispossessed of his cure, as minister of the National Scotch Church meeting in Regent square. As Mr Irving still continued to be a member of the presbytery of Annan, the General Assembly of the Church of Scotland now called upon that body to institute further proceedings against him, on the ground of his heretical sentiments; and after the preliminary measures had been gone through, the trial was fixed for the 13th of March, 1833. It excited an unusual interest in every part of Scotland, especially in the southern departments. The result was, however, the same as in the former case; and the moderator of the presbytery of Annan formally pronounced the sentence of deposition of the Rev. Edward Irving from the ministry of the Church of Scotland. On the next morning, Mr Irving delivered a lecture from a tent, nearly opposite the parish church at Annan, to a congregation consisting of seventeen hundred persons; and previous to his departure from Scotland, he preached a number of sermons, in the open air, at Cummertrees, at Dumfries, at Summer hill, at Terregles, &c. On his return to London, he continued the same practice for a considerable time.

The complaint which led to Mr Irving's death was consumption, produced by his laborious and unceasing efforts to propagate the peculiar religious tenets to which he had attached himself. In the autumn of 1834 he went to Scotland, for the benefit of his health. He expired at Glasgow, on the 6th Dec. 1834, under the roof of Mr Taylor, virtually a stranger to him, but who sought his society from a regard for his character. Those who had seen him only within the last twelve months, and had marked his long gray hair, and wrinkled brow, were surprised to learn that he had attained only his forty-second year. His funeral was attended by most of the clergy of Glasgow, and by most of the elders and deacons of St John's parish, in connection with whom he spent probably the most useful days of his life.

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JACKSON, John; an eminent portrait-painter, was born at Lastingham, a small village in the North Riding of Yorkshire, on the 31st of May, 1778. Very early in life, he evinced a capacity for pencilling a likeness; but he was apprenticed to his father's business, that of a village tailor. Whilst yet the term of his indentures was unexpired by nearly two years, finding occasional opportunities for the indulgence of his propensity for the art, he had made some heads in small, which exhibited a talent much beyond what could be expected from one entirely self-taught, with no example of art to refer to in aid of his ardent desire to improve. These attempts fortunately were shown to the family of the late earl of Mulgrave; and this circumstance laid the foundation of that auspicious career which commenced on his becoming the *protégé* of that worthy nobleman; who, with his lordship's brother, the honourable general Phipps, and others of his noble family, were the constant patrons and friends of the painter through life. It was owing to this circumstance that Mr Jackson obtained the countenance of the late Sir George Beaumont, at whose instance, by a subscription fund, the remainder of the term of his apprenticeship was purchased, when he was happily placed in a state of freedom to pursue the bent of his inclination for graphic study; with means much more felicitous than those which usually attend native talent, on its first embarking to explore the wide ocean of taste.

Mr Jackson, having accomplished the term appropriated to the study of drawing, commenced portrait-painter in the metropolis, and obtained much employment. For some years, however, subsequently to this, his portraits in oil obtained for him no great distinction; but his portraits in water colours were universally admired; and his practice in this department was extensive, and productive of a very handsome income. In these, the heads were tastefully drawn, the resemblances were faithfully correct, and, although carefully finished, wrought with masterly spirit. The style indeed was so deservedly popular, that his practice was greater perhaps than that of any contemporary portrait-painter in small. Many of the heads engraved in Cadell's splendid publication, "Portraits of Illustrious Persons of the Eighteenth Century," were from drawings by Jackson. However great the celebrity and the income which Jackson obtained by these performances, many of which were beautiful, he sought distinction in a superior order of art. He felt conscious that by due exertion he might compete with the most celebrated portrait-painters in oil; and relinquishing the practice of water-colours, soon accomplished his object. "He occupies a place," says a writer in the Athenæum, "between the fine, elegant detail of Lawrence, and the vigorous generalities of Raeburn: or, as others word it, though perhaps less truly, he is a disciple of the school of Reynolds, and one of the cleverest of its followers. Where thought and intelligence were required, he readily supplied them; he rose and fell with his subject, and may be considered as one of the most honest of all the children of flattery. He had an uncommon readiness and skill of hand—a rapid felicity of finish, which enabled him to dash off at a few sittings whatever he undertook: his colouring was deep, clear, and splendid; and in this he more resembled Reynolds than any artist since his day."

On the 6th of November, 1815, Mr Jackson was elected an associate of the royal academy; and on the 10th of February, 1817, a royal academician. In the year 1816, he accompanied general the hon. Edmund Phipps in a tour through Holland and Flanders; and in 1819, in company with Mr Chantrey the sculptor, he made the tour of Italy, by way of Geneva, Milan, Padua, Venice, Bologna, Florence, and Rome. At the imperial city he was elected a member of the academy of St Luke. His death took place at his house in St John's Wood, on the 1st June, 1831. He was twice married, and left children. His character was that of an amiable and generous man. Although belonging to the sect of Methodists, he left an altar-piece for the church of his native parish. The subject is, "Christ in the Garden," from Corregio, which he completed shortly before his death.

JAMAICA, (*a*.) This island lies about 900 miles to the west of the Windward and Leeward chain, in latitude 17° 35′ to 18° 30′ N.; and longitude 76° to 78° 40′ W.; and extends 170 miles in length from east to west, and about fifty in its broadest part from north to south. Throughout its whole length there runs a lofty range of mountains, from 7000 to 8000 feet in height, forming a complete barrier between the north and south sides, except where intersected by two defiles, through which communications are established. Each side of the island presents considerable diversity in physical aspect. On approaching the south, the immense mass of the Blue Mountains at once bursts on the view; their summits a succession of abrupt precipices, intersected by deep chasms and gulleys; the lower range crowned with wood, less rugged in their outline, intersected by wider valleys, and ultimately terminating in a long plain, from eight to twelve miles in breadth, which extends from their base to the ocean. On this level tract, or in its immediate vicinity, the principal towns and largest military stations are situated; the soil is of a rich brick-coloured mould, exceedingly fertile, and watered by numerous rivers, intersecting it in almost every direction.

On the north side there are few plains or level surface of any extent; the ground rises at once from the sea by a succession of gentle acclivities, separated by wide valleys; the hills are rounded on the top, and studded with thick groves of the pimento tree. These features gradually become bolder in their outline till they join the high range in the centre of the island, where they are covered with immense forests of cedar. The soil on this side is generally a chalky marl, producing a rich verdure, similar to that of an English lawn, and watered by an immense number of rivulets and cascades.

The interior of the island has quite a different appearance from either side, presenting all the varieties of feature peculiar to a highland district; in some parts rugged, difficult of access, and densely wooded; in others spreading out into a wide expanse of table land or elevated plain, from which rise a number of small hummocks, giving a slight undulation to the surface. The ground in such spots is generally clear and open, covered with rich grass, and of a pastoral character. These regions, in which cultivation has made but little progress, are principally used for the rearing of cattle.

As these portions of the island present varieties in physical aspect, so they exhibit a corresponding diversity in climate. On the plains or sea-coast of the south side, the thermometer at noon does not vary more than 8° or 9° throughout the year, its greatest height being about 92°, and the lowest 83°. The mid-day heat on both sides of the island is greatly modified by the influence of the sea breeze, which generally sets in from the eastward about eight or ten o'clock in the morning, increases in force till about two, and declines with the sun, until, on the approach of evening, it is succeeded by the land wind from the mountains. When these winds become less regular, or altogether fail, as is sometimes the case before the rainy season, the atmosphere is exceedingly oppressive to the feelings, though the thermometer perhaps exhibits but little change in the temperature. The quantity of rain which falls throughout the year is about fifty inches.

The high lands in the interior of the island possess a very different climate from that of either side, their great elevation producing a corresponding diminution of temperature, which would be still more perceptible, were it not that the sea breeze, which modifies the heat of mid-day in the low country, does not extend to the mountains, and is even but partially felt at the distance of a few miles from the coast. It is consequently in the morning and evening that the diminution of temperature is most felt in the high grounds; at which periods it sometimes exceeds 25°.

In this island almost any variety of climate may be procured. At a residence 4200 feet above the level of the sea, the range of the thermometer is from 55° to 65°; in the winter it falls even as low as 44°. There the vegetation of the tropics disappear, and is supplanted by that of temperate regions. Showers are common in the interior almost throughout the whole year, but they do not fall with the same violence as in the plains, and the quantity of rain appears to be less. The air is exceedingly humid, subject to dense fogs, and those rapid alternations of temperature peculiar to all mountain regions.

The troops here consist of white and black regiments. Of the former the numbers employed have varied from 1895 to 3285, according to circumstances; the average garrison has been 2578. The number who have died in the course of twenty years has been 6596, exhibiting an average annual mortality of 128 per thousand; and it is rather remarkable that, if the mortality from [illegible] to [illegible] be taken on the same principle, it amounts to [illegible] per thousand, so that the climate has presented exactly the same fatal character ever since [illegible]. Even so far back as 1655 the deaths among the troops during the sickly season amounted to [illegible] per week, and, some years later, out of [illegible] who arrived two-thirds died within a fortnight.

Of the 6596 deaths recorded between 1817 and 1837, the causes and place of disease of [illegible] only can be ascertained: the rest consist of accidental deaths, or of those which took place on detachment where there was no medical officer to record the disease.

An investigation into the extent of mortality at each station shows that all are by no means equally unhealthy; nay, some approach in salubrity to the climate of Britain.

The following Table sufficiently establishes the fact, as well as demonstrates the extremely variable character of the climate, by showing the relative influence of mortality in each year, at the principal stations throughout the island.

Out of every 1000 *Troops at the undermentioned Stations the following proportions have died in each year from* [illegible] *to* 1836 *inclusive.*

Years.	Up-Park Camp.	Port Royal.	Fort Augusta.	Spanish Town.	Stoney Hill.	Port Antonio.	Falmouth.	Montego Bay.	Maroon Town.	Lucea.	[illegible]
1817	83	30	34	128	[illegible]	192	74	[illegible]	—	[illegible]	[illegible]
1818	65	50	33	378	27	[illegible]	67	67	[illegible]	[illegible]	[illegible]
1819	301	316	103	[illegible]	301	346	130	—	[illegible]	[illegible]	[illegible]
1820	160	[illegible]	92	273	50	64	[illegible]	—	[illegible]	[illegible]	[illegible]
1821	120	225	44	91	48	219	[illegible]	—	[illegible]	[illegible]	[illegible]
1822	443	206	51	242	47	[illegible]	117	[illegible]	[illegible]	[illegible]	[illegible]
1823	82	[illegible]	31	200	25	[illegible]	34	—	[illegible]	[illegible]	[illegible]
1824	45	100	61	[illegible]	[illegible]	194	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1825	341	331	36	[illegible]	462	—	184	—	[illegible]	[illegible]	[illegible]
1826	72	94	61	186	18	—	[illegible]	—	[illegible]	[illegible]	[illegible]
1827	226	156	[illegible]	164	[illegible]	96	[illegible]	—	[illegible]	[illegible]	[illegible]
1828	118	18	64	82	37	147	61	[illegible]	[illegible]	[illegible]	[illegible]
1829	43	82	70	81	13	[illegible]	52	[illegible]	10	[illegible]	[illegible]
1830	120	148	42	134	18	125	65	—	[illegible]	[illegible]	[illegible]
1831	110	34	79	206	174	134	[illegible]	—	[illegible]	—	[illegible]
1832	91	33	34	57	73	185	73	[illegible]	[illegible]	[illegible]	[illegible]
1833	78	20	56	67	34	[illegible]	70	174	[illegible]	[illegible]	[illegible]
1834	70	107	51	[illegible]	26	173	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1835	52	36	70	194	34	117	64	34	4	[illegible]	[illegible]
1836	51	9	60	144	21	25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
General Average	140·6	113·1	73·5	168·4	[illegible]	149·3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Jamaica is ruled by a governor, or captain general, (appointed by the crown), aided by a council of twelve, somewhat similar to the house of lords, and a house of assembly, answering to the lower house of commons. The council is generally appointed by the king, through the secretary of state for the colonies, from among the most respectable colonists who are ex-officio justices of the peace. The lieutenant-governor, chief justice, attorney-general, and the bishop, are all ex-officio members of the council, each member of which is removable at the pleasure of his majesty. The Assembly consists of forty-five members, each of the parishes sending two representatives, and Spanish Town, Kingston, and Port Royal an additional member each; a representative must *possess a freehold of* £300 per annum* in any part of the island, or a personal estate of £[illegible]; an elector must be of age, and possessed of a freehold of £10 per annum in the parish for which he votes. Persons of colour are now admitted to all the privileges of white persons, and there are no civil disabilities from religious differences. The governor has the title of his Excellency, and is invested with the chief civil and military authority; he is also chancellor, ordinary, and vice-admiral. On his death or absence, the government devolves on the deputy or lieutenant-governor, if there be any; otherwise on the senior counsellor, who rises in rotation to the presidency, and has a salary of £1000 per annum.

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* Such was the law, but it has not been amended to

The council, who are by courtesy severally addressed in the colonies by the title of Honourable, consists of twelve members. They are appointed by mandamus from the king, and hold their offices during his Majesty's pleasure; but if at any time by death, absence from the island, or suspension, the council should be reduced to less than the number limited by the instructions to the governor, he may appoint as many persons out of the principal freeholders, inhabitants of the island, to be members of the council, as will make up such number; which persons so appointed may act as councillors until they are disapproved, or others are appointed by his Majesty. The governor may, however, suspend any of the members of the council from sitting, voting, or assisting therein, if he find just cause for so doing; but he must, by the first opportunity, signify to the English government any vacancy in the council, from whatever cause it may arise.

The duty of the council is to give advice to the governor or commander-in-chief for the time being, when required; and they stand in the same relation to the governor in the colony as the privy council in England does to his Majesty; they are also a constituent part of the legislature of the colony, corresponding with the British house of peers; and, finally, they sit as judges on certain occasions.

The general assembly are the representatives of, and chosen by, the people, and correspond with the British house of commons, and its utmost duration is seven years. The laws and statutes of England passed previously to the settlement, unless they are from their enactments inapplicable to the local circumstances of Jamaica, apply to the colony. Statutes passed in England since 1728, unless they relate to trade and navigation, are not in force there. The assembly have all the privileges of the house of commons in England; they have the sole power of levying taxes, and the distribution thereof, with the exception of an annual permanent revenue to the crown of £10,000; the salary of the speaker of the assembly is £1000 per annum.

The governor, with the advice and consent of the council, may, from time to time, as occasion requires, summon the general assembly together, and may, of his own authority, adjourn, prorogue, and dissolve it.

The council and general assembly, with the concurrence of the king, or his representative the governor, may make laws, statutes, and ordinances for the public peace, welfare, and good government of the colony, so that they be not repugnant, but as near as conveniently may be agreeable to the laws and statutes of Great Britain. Under the head of *West Indies*, a view will be taken of the results of the recent abolition of slavery there.

JAMIESON, John, D. D., F.R.S., Edin., and F.S.A., Scot., an eminent Scottish antiquary and philologist, was born in Glasgow, in 1758, his father being first minister of the Duke Street Antiburgher chapel there. He himself was educated for the ministry, and for many years officiated as clergyman to a congregation of Antiburghers in Forfar. He was afterwards called to a chapel in Edinburgh belonging to the same body of dissenters, in which he continued for the last forty-three years of his life. His death took place at his house in George Street, Edinburgh, on the 12th July, 1838.

He first came forward as an author in 1789, in "The Sorrows of Slavery, a Poem, containing a faithful statement of Facts respecting the Slave-trade." His only other poetical work is "Eternity, a Poem, addressed to Freethinkers and Philosophical Christians," 1798. In theology and religious matters he published, "An Alarm to Britain; or an inquiry into the causes of the rapid progress of Infidelity," 1795; "Vindication of the Doctrine of Scripture, and of the primitive Faith concerning the Divinity of Christ, in reply to Dr Priestley's History of Early Opinions," 1795, two vols. 8vo.; "Remarks on Rowland Hill's Journal," 1799; "The Use of Sacred History," 1802, two vols. 8vo.; "The Divisions of Reuben," 1805; Important Trial in the Court of Conscience," 1806, 12mo; "The Beneficent Woman, a sermon," 1811; "The Hopes of an Empire reversed, or, the night of pleasure turned into fear, a Sermon on the death of the Princess Charlotte," 1818; "Three Sermons, concerning Brotherly Love," 1819; "Sermons on the Heart."

His great and excellent work, "An Etymological Dictionary of the Scottish Language," was published in two volumes, 4to. 1808, 1809. It illustrates the words in their different significations, by examples from ancient and modern writers; shows their affinity to those of other languages, and especially the Northern; explaining many terms which, though now obsolete in England, were formerly common to both countries, and elucidating national rites, customs, and institutions, in their analogy to those of other nations. It has been long out of print, but he made an Abridgment of it in 1818, in one volume 8vo. A supplement to the original work was published in two vols. 4to. In 1811, he published "An Historical Account of the Ancient Culdees of Iona, and of their settlement in England, Scotland, and Ireland;" in 1814, "Hermes Scythicus, or the radical affinities of the Greek and Latin languages to the Gothic," 8vo.; and still later an "Historical Account of the Royal Palaces of Scotland." Dr Jamieson was a Royal Associate on the Royal Foundation of the Society of Literature, to whose transactions he contributed some papers, as well as to the transactions of the society of antiquaries.

JARROW; a village in the county of Durham, anciently called *Gyrwy*, about half a mile south of the river Tyne, and two miles from South Shields. It was formerly a place of importance, though now consisting only of a few cottages, an ancient church, and the ruins of a monastery. The latter was founded about the year 684, by the abbot Benedict Biscopius, who had before built the monastery of Monk Wearmouth, and who is said to have been the first person that brought the art of making glass into England. Indeed, Monk Wearmouth was distinguished as being the earliest *glazed* church in this country; before this time, the windows were either latticed, or, at best, filled up with fine linen cloth stretched upon frames of wood.

The monastery of Jarrow suffered frequently by fire, and through the violence of the Danes; at the Norman conquest, the church was but a poor thatched hovel, made up of old walls, with a roof of unhewn timber. Bishop Walcher, however, who had been presented to the See of Durham, by William I., assisted in restoring the ruined monastery. He bestowed upon it several neighbouring manors, and excited some monks of Munkchester, (now Newcastle,) to take up their residence in his diocese, Munkchester being then included in the jurisdiction of the earl of Northumberland. The monastery being thus established, and afterwards much increased, both in revenues and numbers, a division took place among the brethren, and bishop William de Carilepho, Walcher's successor, removed the inmates of the establishment to Durham, when it became only a cell to that monastery. Jarrow monastery was dedicated to St Paul, and the monks were of the Benedictine order. The remains, which do not betoken any great extent of the ancient building, are situated on an eminence. The church appears, from the situation of the tower, to have been in the form of a cross, but it has been so frequently dilapidated, that it is difficult to decide this with accuracy. The present structure is part of the ancient building connected with a portion restored in 1783. Jarrow was the birth-place of the venerable Bede.

JEWS, (*a.*) The popular impressions with respect to the character and fate of the Jews are not so distinct as so important a history requires. We know of no divine inflictions; the punishments of individuals and nations are the natural consequences of their conduct; the misdeeds of communities, as well as the sins of individuals, put an end, sometimes for ever, to that quiet which it is the best prosperity of men and nations to enjoy. The founder of the Hebrew nation, acting under the authority of Heaven, had framed a constitution for this favoured people, which prescribed pursuits adapted to their soil and character, guarded them against the excesses of passion, bound up the hands of national ambition, and gave each individual as much freedom as was consistent with the general welfare. It protected the possessions of the rich and the earnings of the poor, encouraged habits of industry, and set bars to violence and corruption. Had the Hebrews been content to sit down quietly under the shadow of these institutions, they would not have had wealth to invite oppression, and would not have lost strength to repel any invasion of adventurers. But they could not understand the wisdom of their law, and disregarded it so completely, that the very book was lost; and when it was accidentally recovered in the reign of Josiah, all hearts were filled with dismay to find how widely they had wandered. Still they were not instructed by experience;—even Hezekiah, one of their best kings, could not resist the strange ambition of displaying his wealth to robbers. The natural consequences followed. As their welfare depended on the observance of their civil system, their misfortunes followed hard upon its violation. Their occasional reformation restored their character and happiness for a time; but the whole tendency of the state was downward; and the inspired prophets foretold, with amazing and awful exactness, all the particulars of its righteous doom. We cannot help thinking, that the national character is too unfavourably represented on this account. The same argument is made use of, by which the friends of Job attempted to convince him that he was more guilty than others, because he suffered more. Their character was not an amiable one; but it will be observed, that the severity of the prophets, as well as of our Saviour, falls not so much on the people, as on those who misled them. A deep and burning spirit of patriotism was their strongest passion; and it cannot be denied, that they exhibited a resolution when their country was in question, which under better guidance might have made them a virtuous people. But under the direction of the Pharisees, it led to fatal results, even to the barbarous murder of Jesus Christ. But it should be remembered, that when John appeared, calling them to repentance and reform, he became their favourite, and their demagogues dared not say a word against him. The same popularity attended Jesus Christ, though his appearance disappointed all their hopes, which for centuries had looked for his coming in the high and commanding majesty of the conqueror and king. It required the most unwearied malice on the part of their leaders, to weaken his influence, and to work them up to that mad excitement, in which they demanded his blood. All this, we think, is implied in the memorable words, "Father, forgive them, for they know not what they do."

We mention this, because there is a prevailing error on this subject, and the sympathies of men are unfairly divided between the Jews and Romans. Josephus, who wrote under the eye of the conquerors, has been too long suffered to mislead men by those representations of the atrocity of the Jews and the humanity of the Romans, by whom he endeavoured to cover the shame of deserting a cause, for which his countrymen thought it a privilege to die. Let it be remembered, that whatever might have been the national guilt which brought them into bondage, their rebellion was an effort to be free;—a rebellion, occasioned not by the extortions of Hebrew viceroys, nor the severity of Roman procurators, hard as these evils were to their proud spirits to endure; but, after years of suffering, they rose in a universal flame, the moment an insult was offered to their religion. If any respect is due to patriotic self devotion, we cannot withhold it from theirs. And it is an evidence of the power which a popular historian has over the moral judgment, that readers in general should so long have sympathised with Hume against the English patriots, and with Josephus against the Jews. For nothing can be more absurd than to look on the Romans with complacency, because they were employed on this occasion, like the barbarian who afterwards overran their empire, as a scourge in the hands of God. It is quite too much to be called on to admire the humanity of Titus, whose heart was not all stone, though it seems that he tortured his wretched prisoners till no more ground remained for a cross to stand upon. The march of their armies was well described as the "curse of desolation;" wherever was found the "carcass" of a fated city, there one might be sure that their "eagles were gathered;" when they spread their pinions, it was like the waving of the death-angel's wing; and yet from our youth, we are taught to bless the name of the ravenous and grasping plunderer, and it is bad taste to give even the alms of compassion to the memory of his victims.

We do not deny that the annals of the Jews abounded in crimes; but we have no idea of bringing the Romans into this contrast, for the purpose of exalting that great pest of the world. Those who measure character by fortune, must remember that the eternal city was at no distant period, compelled to drain the cup she had poured out so liberally for the nations. *Her* temples were overthrown; the tombs on which her great names were written, were defaced by barbarian hands; and, while in every nation there are living memorials of the Hebrew race, there is not one who can trace his heraldry from Rome. It is the duty of all, who would give a right direction to moral feeling, to resist this unhealthy admiration of lawless violence, whether of ancient or modern times. There is no need of recommending these splendid sins; power will always command respect, and the right hand of the conqueror will cast aside moral as well as physical resistance. Still it is not well to keep incense constantly burning on this altar of human blood; for, though these great tyrants of man are not common, all the relations of life are affected by a sentiment, which encourages false ambition, and turns real glory into shame.

The history of the Jews since the destruction of Jerusalem, is truly wonderful, and affords a most striking testimony to our religion. Never was vessel dashed upon the rock into smaller fragments, than the Hebrew nation in that tremendous overthrow; a million of its best lives were sacrificed; all its noblest blood was shed; the temple was ruined from topmost tower to lowest foundation-stone, and a cold and heavy desolation thrown over all the borders of the land. And this was the people, who deemed themselves the favourite sons of God! for whom he had suffered the bright light of prophecy to send its unnatural dawn far into the depth of coming ages; whom he had suffered, though unworthy, to lean so confidently upon his everlasting arm! One would have thought that so profound a calamity would have turned every Hebrew heart to stone. But every thing about this strange people disappoints predictions founded on human nature. Fortresses still existed in Judea, and, though shaken by the thunder of Jerusalem when it fell, held out without a sign of dismay. Masada was the last that fell into the hands of the Romans. They had surrounded it, and at last succeeded in battering down its walls; but when the night brought a pause to the combat, the Jewish leader assembled his comrades and told them that God had forsaken his people; still he was more merciful than the Romans, and he proposed that they should fire the city, and offer themselves, their wives and children, as a last burnt offering upon a glorious altar. They approved his counsel; embraced their wives and children with tears, and then stabbed them to the heart. Having chosen ten of their number by lot as executioners, they embraced the corpses of their loved ones, and submitted their necks to the blow. The ten then cast lots; and when nine had fallen by each other's ands, the last survivor set fire to the palace, and drove the sword into his own heart. When the Romans entered the city, they were affrighted at the desolation. Savage and horrible as such self-devotion is, it is impossible not to admire the trength of heart which it discovers; and, without inspiration, one might foretell, that so long as solitary heart of this description was left to beat, *would* treasure its national distinction as its le *remaining* pride.

Thus, in truth, it has been in every country under the sun. They were scattered to the four winds, like the ashes of their temple; and now the keel of the adventurer can hardly reach a shore, where the Jews have not been before him. Gain is the only avenue to power which their feet are permitted to tread, and they walk in it with an industry that never sleeps. Unsocial as they are, go where they will, they adapt themselves with wonderful flexibility to the habits of the people. To a certain extent they mingle with others in the intercourse of life; but there is a veil in their hearts, like that of the temple, never lifted; a sanctuary, into which the eye of no Gentile is permitted to look. There is no region in which they cannot make themselves a home; and yet they draw a line broad and deep between themselves and others, by keeping up their ancient usages, circumcision, abstinence from unclean meats, and all animal food which has not been killed by a Jew, by assembling in their synagogues, and there worshipping God in the language of their fathers. They are at home, and yet are exiles; familiar, and yet strangers; content with an unenviable lot in the land of their adoption, and yet constantly looking over its boundaries to their own holy land; having every thing to humble and depress them, and yet looking forward with triumphant hope to a time, when the coming of the Messiah, "like the lightning shining from the east to the west," shall shiver and melt their chains.

It is impossible to tell when and how the scattered fragments of the Jewish nation were collected and bound together; but not long after the fall of Jerusalem, we find two Hebrew communities; the one on the other side of the Euphrates, under the prince of the captivity, the other on this side the river, under the patriarch of the West. The school of Jamnia, which pretended to be the Sanhedrim saved from the general ruin, obtained great authority; and, as it was principally spiritual in its pretensions, it did not excite the jealousy of the Romans. It is curious to see how a gradual, but unconscious preparation had been made for a monument of this kind, flattering to the pride of the Jews, but as useless in itself as the fabled pillars that survived the flood. The priesthood had been gradually superseded in the course of ages. The authority of tradition overshadowed that of scripture, and the interpreters of this new volume acquired unbounded influence. At the same time, the worship of the synagogue grew up in place of that of the temple; so that when the ruin seemed complete, a new worship and new priesthood were already created to their hands. Even this was enough to give them a feeling of strength; and before the generation that saw the fall of Jerusalem had passed away, the whole body of Jews west of the Euphrates rose, in a fire that spread at once into a conflagration, and was only extinguished with the loss of six hundred thousand men. The emperor then issued edicts meant to destroy their race; but at this moment, apparently so uninviting, a pretended Messiah, calling himself the "Son of the Star," appeared; set up his standard in Jerusalem, and the Jews poured in by thousands, with a spirit unbroken by disaster, ready to make a new appeal to arms. But their king was slain; the plough passed over the fresh ruins of the city, and all Jews were forbidden to come near it again.

But even then, when Jerusalem was left a city of the dead, and for the third time since our Saviour's prophecy, "the mountains were melted with their blood," their courage and faith endured. Not sixty years after, we find a patriarch at Tiberias in this very region, whose authority was acknowledged by all west of the Euphrates, while the prince of the captivity still held his melancholy state upon the eastern side. He, too, had suffered his share; and at the very moment when the Roman power was about to crush him, the accession of a new emperor drew off its armies, and left his dominion like a ship-wrecked vessel, saved by the sinking of the tide. In this patriarchate at Tiberias, there was no power but such as was conceded to it by public opinion;—but its legates visited all the Jewish establishments in various lands, and received the tribute, which was regularly paid. Such was the force of this Rabbinical dominion, that for a time, the prince of the captivity submitted to its power. One of these patriarchs, in the third century, was the author of the celebrated Mishna, or code of traditional law. The western prince again recovered his ascendency, and governed in Babylonia with the splendour of a king. In the schools of his dominion, comments were made on the law and the Mishna, which were embodied in the Gemara; the Mishna and Gemara together make up the well known Babylonian Talmud. This Rabbinical lore has been extremely unfortunate for the Jews; it has weighed upon them like a millstone, and prevented their entering the lists of intellectual glory. In fact, all their apparent prosperity at this time was a calamity, because it served to draw upon them the attention of the world.

The patronage or opposition of the emperors could not do much to uphold the faint shadow of a state which the patriarchate presented. It was nothing more than a standard floating on a dismantled tower. Both the patriarch and the prince of the captivity seemed to be upheld by a feeling of national pride, without any substantial authority, and without any thing to sustain them in the changes of the world; so that even before the barbarians flowed in upon the Roman empire, the patriarchate had gone down. The principality, being out of the path of revolutions, escaped till the tenth century, gladdening the hearts of the Jews with the sight of its hollow glories, but all the while wearing away. We may say on the whole, that the dark ages found the Jews nearly where the fall of Jerusalem left them; they had not yet found a resting-place in the world.

While the Jews were suffering every thing under the Christian emperors, rather than give up the least observance of their religion, the Samaritans were more disposed to bow their heads to the storm. They eluded the severe laws of Justinian, by submitting to baptism as a matter of necessity, and then quietly returning to the faith of their fathers. We have never been satisfied with the prevailing opinion, that the Samaritans are the descendants of the idolaters (introduced by Esarhaddon) who gradually adopted the religion of the land. We do not think that scripture requires us to believe that the ten tribes were so completely rooted out. The Jews from their prescriptive hatred of the rival house of Israel, always represented the Samaritans as Cutheans, but their evidence must be admitted with caution in a case of the kind. It is admitted that a remnant escaped; and it would seem that it was large enough to keep up the old religion of the land. In our Saviour's time they were expecting the Messiah, and though he was reserved in declaring to the Jews that he was their expected king, he announced it without hesitation to the Samaritans; and if he charged them with "worshipping they knew not what," the charge would apply with equal force to the Jews, who believed in the sacredness of their temple with the same superstition. It is singular, that after the persecution of Justinian, they were almost lost to history for ages, till at last, in the seventeenth century, a remnant, like the mutineers of the Bounty, were discovered on the side of their own holy mountain. There they had looked securely down upon the changes of the world, preserving their ancient religion, and treasuring most of all the scriptures in the Samaritan or old Hebrew character. The Jews during their captivity had borrowed the Chaldean letters. From their correspondence with Scaliger, in reply to his inquiries, they seem to observe the law of Moses with more strictness in many points than the Jews themselves.

When the Mussulman crescent rose in the east, it turned the tide of human affairs in favour of the Jews. Mahomet was very desirous to make the Jews his converts; and as he acknowledged Moses as a prophet, insisted upon circumcision, and made the unity of God the chief doctrine of his religion, they were disposed to favour him against the Christians. They must have seen too, that his armies were likely to prevail, led on by such chiefs as Khaled, who, when advised to repose a moment from the weariness of a day of battle, replied, "There is rest enough in the world to come." But Mahomet required too much of the Jews. He wished to make them disciples as well as partisans, and failing in his attempts, he became their enemy, and persecuted them to the end of his days. But they fared better with his successors, who required no such impossibilities; and it was not without satisfaction, that they saw Omar take Jerusalem from the Christians. Even when he built the mosque which bore his name upon the ruins of their temple, they found consolation in the thought, that the Christians were effectually humbled. Some writers have thought, that a wide conspiracy in favour of the Mahometans was formed among the Jews; but their character is proof enough that they engaged in no such alliance. The natural union of interest and feeling was all that was needed; and we must say, though it is not to the honour of human nature, that nothing binds human hearts so firmly together as hatred to a common foe.

The conquests of Mahomet set the whole world in motion for several centuries. His successors having acquired the thirst of adventure, were not content with the quiet possession of Arabia and Syria; they poured like a flood into Egypt, and swept along the whole southern coast of the Mediterranean; they then passed into Spain, where they established an empire, and as if nothing could set bounds to their enterprise, penetrated into the heart of France. The Saracens also insulted the declining majesty of Rome. But almost every step of their desolating march was over a Christian nation; the pride of the Christians was so deeply wounded, and two or three centuries after, we find the whole Christian world in motion along the northern shore, to avenge the injuries of the cross. The whole course of these revolving events had an important bearing upon the interests of the Jews. They are supposed to have had an agency in bringing about the first invasion of Spain by the Saracens, in which Roderick lost his life and crown; an agency, however, which was fully justified by the cruelty they endured from the Gothic kings. These troubled times brought them into notice. Their superior intelligence and education made it necessary to give them offices of profit and trust; and when Charlemagne determined on sending an embassy to Haroun al Raschid, one of this race was employed to represent the European sovereign, and to conduct the diplomatic intercourse between Bagdad and Aix-la-Chapelle.

The conquest of Spain by the Moors, and the establishment of Charlemagne's great empire, were circumstances which threw a gleam of light upon the dark current of the Jewish history; and we are thus particular in allusion to them, because in that age, the Jews fixed that character which they retain at the present day. They did not lose the opportunity; but exerting themselves with their usual sagacious and untiring industry, they became rich;—every stream of commerce in every nation flowed with golden sands for them. In France they took a high stand, and in Spain they were hardly distinguished in wealth, honour, and trust, from their Saracen masters. But the natural result was, that when the wild spirit of chivalry began to prevail in the world, ruling in the hearts of men by maxims with which morals and humanity had very little to do;—the fortunes of the great were exhausted by martial extravagance, the earnings of the poor were drained by oppression, and as the Jews offered a vast resource to beggarly nobles and princes, their wealth at once became a crime. It was discovered that they were guilty of the murder of our Saviour nearly a thousand years before, and for this, it was but reasonable that they should be insulted and plundered in every Christian land. The Jews, with their usual still fortitude, prepared not only to meet, but to draw advantage to themselves from the storm. The soldier of the cross must have his arms; and in the excitement of the moment, the crusaders were ready to pledge every thing for gold. But when the time for payment came, they found that their revenues had not been increased by the prodigality of war, and they were obliged to resort to other means to redeem the pledges they had given. The Jews were then exposed to all kinds of violence; their wealth was confiscated, and their persons banished. Philip Augustus and St Louis in France, distinguished themselves by this saintly extortion. In the reign of Richard I. of England, they were exposed to one of the most infamous massacres recorded in history, and passed through repeated changes of hope and suffering under his contemptible successor.[*] England has nothing to boast of in this dark registry. The only ray of mercy and honour that could be seen in all Europe was in Germany, where Frederick II., the most accomplished prince of his age, had penetration enough to see the baseness of the charges brought against them. When informed, according to the usual scandal of those times, that some Christian children had been found in the house of a Jew, murdered in preparation for the passover, "Bury them," was his only reply. Happy would it have been for Europe, if other sovereigns had resembled him; though superstition had a hold on his dominions, it had none upon his mind: even as a crusader, the grandson of Barbarossa effected by peaceable means what others could not accomplish by war, and left a name as enviable among the infidels, as that of Saladin has ever been among the Christians.

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[*] The following interesting account of the destruction of the Jews at York is given by D'Israeli, in his "Curiosities of Literature."

"When Richard I. ascended the throne [in 1189], the Jews, to conciliate the royal protection, brought their tributes. Many had hastened from remote parts of England and appearing at Westminster, the court and the mob imagined that they had leagued to bewitch his majesty. An edict was issued to forbid their presence at the coronation; but several, whose curiosity was greater than their prudence, conceived that they might pass unobserved among the crowd, and ventured to insinuate themselves into the abbey. Probably their voice and their visage alike betrayed them, for they were soon discovered; they flew diversely in great consternation, while many were dragged out with little remains of life.

"A rumour spread rapidly through the city, that, in honour of the festival, the Jews were to be massacred. The populace, at once eager of royalty and riot, pillaged and burnt their houses, and murdered the devoted Jews. Benedict, a Jew of York, to save his life, received baptism; and returning to that city, with his friend Jocenus, the most opulent of the Jews, died of his wounds. Jocenus and his servants narrated the late tragic circumstances to their neighbours, but where they hoped to move sympathy, they excited rage. The people at York soon gathered to imitate the people at London; and their first assault was on the house of the late Benedict, which having some strength and magnitude, contained his family and friends, who found their graves in its ruins. The alarmed Jews hastened to Jocenus, who conducted them to the governor of York castle, and prevailed on him to afford them an asylum for their persons and effects. In the meanwhile, their habitations were levelled, and the owners murdered, except a few unresisting beings, who, unmanly in sustaining honour, were adapted to receive baptism.

"The castle had sufficient strength for their defence; but a suspicion arising that the governor, who often went out, intended to betray them, they one day refused him entrance. He complained to the sheriff of the county; and the chiefs of the violent party, who stood deeply indebted to the Jews, uniting with him, orders were issued to attack the castle. The cruel multitude, united with the soldiery, felt such a desire of slaughtering those they intended to despoil, that the sheriff, repenting of the order, revoked it, but in vain; fanaticism and robbery once set loose, will satiate their appetency for blood and plunder. They solicited the aid of the superior citizens, who humanely refused it; but having addressed the clergy, were by them animated and conducted.

"The leader of this rabble was a canon regular, whose zeal was so fervent, that he stood by them in his surplice, which he considered as a coat of mail. Their attacks continued, till at length the Jews perceived they could hold out no longer, and a council was called to consider what remained to be done in the extremity of danger.

"Among the Jews, their elder Rabbin was most respected. It has been customary with this people to invite for this place some foreigner, renowned among them for the depth of his learning and the sanctity of his manners. At this time the Haham or elder Rabbin was a foreigner, who had been sent over to instruct them in their laws, and was a person, as we shall observe, of no ordinary qualifications. When the Jewish council was assembled, the Haham rose, and addressed them in this manner—'Men of Israel! the God of our ancestors is omniscient, and there is no one who can say, Why doest thou this? This day he commands us to die for his law: for that law which we have cherished from the first hour it was given, which we have preserved pure throughout our captivity in all nations, and which, for the many consolations it has given us, and the eternal hope it communicates, can we do less than die? Posterity shall behold this book of truth sealed with our blood; and our death, while it displays our sincerity, shall impart confidence to the wanderer of Israel. Death is before our eyes, and we have only to choose an honourable, and easy one. If we fall into the hands of our enemies, which you know we cannot escape, our death will be ignominious and cruel; for these Christians, who picture the Spirit of God in a dove, and confide in the meek Jesus, are athirst for our blood, and prowl around the castle like wolves. It is, therefore, my advice, that we elude their tortures; that we ourselves should be our own executioners; and that we voluntarily surrender our lives to our Creator. We trace the invisible Jehovah in his acts; God seems to call for us, but let us not be unworthy of that call.' Having said this, the old man sat down and wept.

"The assembly was divided in their opinions. Men of fortitude applauded its wisdom, but the pusillanimous murmured that it was a dreadful council.

"Again the Rabbin rose, and spoke these few words in a firm and decisive tone—'My children! since we are not unanimous in our opinions, let those who disapprove of my advice depart from this assembly.' Some departed, but the greater number attached themselves to their venerable priest. They now employed themselves in consuming their valuables by fire; and every man, fearful of trusting to the timid and irresolute hands of the women, first destroyed his wife and children and then himself. Jocenus and the Rabbin alone remained. Their life was protracted to the last, that they might see every thing performed according to their orders. Jocenus, being the chief Jew, was distinguished by the last mark of human respect, in receiving his death from the consecrated hand of the aged Rabbin, who immediately after performed the melancholy duty on himself.

"All this was transacted in the depth of the night. In the morning the walls of the castle were seen wrapt in flames, and only a few miserable and pusillanimous beings, unworthy of the sword, were viewed on the battlements, pointing to their extinct brethren. When they opened the gates of the castle, these men verified the prediction of their late Rabbin; for the multitude, bursting through the solitary courts, found themselves defrauded of their hopes, and in a moment avenged themselves on the feeble wretches who remained.

"Such is the narrative of the Jews of York, of whom five hundred thus destroyed themselves."

The character of the Jews has remained nearly the same to the present day, only varying with the times, not by any wide and decisive change in the prosperity or improvement of the race. But it is needless to dwell upon this period, since it has been set before the public eye in the splendid panorama of Ivanhoe; where we see at a glance the sufferings to which they were exposed, and the fortitude with which they stooped to meet them,—the contempt and hatred with which they were universally regarded, and the power which they contrived to gain notwithstanding,—the low avarice to which they descended, and the traditional enthusiasm inspired by the remembrance of their religion and their holy land. In the delightful vision of Rebecca, perhaps the loveliest portrait the imagination ever drew, we see the gentle firmness formed by long exposure to danger, contrasted in Rowena with the superiority of one who had breathed nothing but the incense of chivalrous adoration; and we fear, that one touch of Sir Walter Scott's pen has done more for this injured race, than justice and humanity in the last thousand years. While we acknowledge the moral taste of Shakspeare in respect to character, and confess that he does not attempt to give the guilty any lasting attraction, we regret that his Merchant of Venice has done so much to associate all that is savage and rapacious with the name of Jew. We cannot blame him for sharing the prejudices of his time, but we certainly are glad that there is a power to correct his errors, and to balance the impression against the Jews which his painting has made, by one in their favour, drawn with equal talent, and from its nature resistless and enchanting.

We are sorry that there is so little to be said of the literature of the Jews. The fetters of Rabbinism have been so closely folded about their minds, as to prevent free and vigorous action. They have had little of the quiet which is most favourable to intellectual exertion, and we take it, that no great literary improvement can be expected from those who are constantly weighed down by the millstone of banishment or bondage. The most remarkable person in this department, who has ever sprung from the race, is the modern Mendelsohn, whose reputation in Germany is thought to have bettered the condition of the Jews. If, however, his opinions were, as we understand them, that the Jews had a revealed law, but no revealed religion beside the law of nature, the Jews must have dreaded his heresy more than they exulted in his success. Their feeling towards him was not unlike that of the Hindoos toward Rammohun Roy, but they forgave him his deism, so long as he did not embrace Christianity.

It is not surprising that a people who have suffered so much by that sickness of heart which arises from hope deferred, should have been exposed to frequent delusion. When they have been so long watching the heavens, ready to believe that every change was a sign of the Messiah's coming, any impostor might calculate upon their easy credulity. Before our Saviour, there were false Christs in great numbers, and since his time the Jews have been repeatedly misled by adventurers. The most remarkable deception of this kind has been practised in modern times. In 1666, Sabbathai Sevi, a person obscurely born, who appeared in Smyrna, took advantage of his remarkable personal beauty to carry on this daring imposture. He formed the design when young, and prepared his way by affecting uncommon self-denial. When the public mind seemed ready for the declaration, he announced himself as the Messiah. The Rabbins resisted him and drove him from place to place, till he reached Jerusalem, where he remained, gathering proselytes, for many years. His declaration excited a strong feeling against him, but one of his most distinguished opposers suddenly falling dead, the accident was interpreted as a testimony of heaven in his favour. Then the glad tidings spread throughout Europe and Asia, that the Messiah was come;—labour was suspended, and the Jews every where waited the call to rise. Meantime Sabbathai found it no easy matter to ride in the whirlwind he had sown. The ardour of his partisans hurried him to Constantinople to confront the Sultan. That monarch made him this fair and reasonable proposal, "that the Messiah should be shot at with three poisoned arrows, and if he proved invulnerable he would himself own his title; if he declined this offer, he must either become a Mahometan or be put to death." Sabbathai was not long embarrassed by uncertainty; he declared himself a Mahometan without any unnecessary delay, and was treated by the Sultan with honour instead of contempt. He then supported the double character which he had assumed with such expedition, and his followers were fast going over to Mahomet in imitation of his example, when the Rabbins succeeded in gaining the ear of the Sultan, who imprisoned him in Belgrade, where he died a natural death in his fifty-first year. Gross and obvious as the imposture was, it long survived him, and his followers are said to be found even now in various parts of the world. This shows how ready they are to grasp at any hope, when faith is almost changed into despair, not only by the growth of Christianity, but by their own tradition. This is found in the Talmud in the form of a prophecy by Elijah, that the world is to continue six thousand years, —two thousand years without law, two thousand years under the law, and two thousand under the Messiah's reign. The first expired in Abraham's life, the second when our Saviour really came. Such a tradition, unimportant as it is to others, one would suppose would be disheartening to them, when they can only evade it, by saying that the advent is delayed on account of the sins of the world; the very sins which the Messiah was to come in order to take away.

It is a little singular that Cromwell and Napoleon each took an interest in the Jews, and endeavoured to remove the ban which rested upon the race. Such was the prejudice of the day, that Cromwell could do but little in their favour, though the republicans were not zealous against them. Harrington, in his Oceana, recommended the sale of Ireland to the Jews. The accession of Charles II. and his court, did more than Cromwell's decision, and after the restoration, the Jews [illegible] quietly into the kingdom, where their descendants remain to the present day. Napoleon caused questions to be proposed to the Jews respecting their allegiance to France, and having received the most satisfactory answers, he assembled a Sanhedrim for the purpose of re-establishing the worship of the synagogue in the empire. It is to be hoped, that after the lapse of some centuries, Christian nations will begin to discover, that their prosperity and religion are not secured by absurd systems of exclusion, which, instead of being a safeguard, are only so many challenges to those without, to batter down the walls which shut them out from the rights they inherit from God and nature.

It is not easy to estimate the numbers of a race who are scattered to the four winds of heaven. The returns made to Bonaparte fixed their number at three millions. This is but a small number, compared with former times. In France there are about forty or fifty thousand. They are still excluded from Spain by an ancient law. In Great Britain their number is variously stated, but not exceeding twenty-five thousand.

The protestant reformation wrought a great but not a decisive change in favour of the oppressed Jews; indeed the theological controversy which prepared the way and smoothed the path for Luther's efforts, arose from Reuchlin's efforts in their behalf. We allude to the generous and successful exertions made by that excellent scholar and worthy man, to save the Jewish writings from the flames to which they were consigned by priestly bigots, on the suggestion of the renegade Pfeffercorn; a struggle that can never be forgotten, from the torrent of ridicule with which Hutten overwhelmed Reuchlin's opponents, in the immortal "*Epistolæ Obscurorum Virorum.*" Under the reformed churches the Jews have been partially tolerated, and their privileges gradually increased; but as yet there are some protestant nations, among which England must unfortunately be reckoned, in which they do not enjoy the full privileges of citizens. We say unfortunately, because we think our brief summary has shown, that in every period when the Jews were oppressed, the principles of evil in their creed became prominent and active; but whenever they enjoyed security and protection, the counteracting principles of good began to work a moral regeneration.

The Jews were not ungrateful to the reformation; in the early part of the last century they became the most zealous supporters of the protestant succession; and it is notorious, that when the Jacobites threatened a run on the bank, the Jews, not only of England but the continent, sent in large supplies of bullion to support the credit of the British government.

In the year 1753, the Pelham administration, with a laudable desire to reward Jewish loyalty, and encourage the accession of such a wealthy people to the subjects of the British crown, introduced a bill for the naturalization of the Jews into the House of Lords: it was supported by Sherlock, bishop of London; Secker, bishop of Oxford; and Hayter, bishop of Norwich; three names of which the ecclesiastical annals of England may be justly proud, and it passed through the upper house without opposition. Its reception in the lower house, when first brought down, was on the whole favourable; but the commercial jealousy of some merchants in the city, the resentment of the Jacobites for the efficacious check given to their machinations by the Jews, and the obstinate prejudices of those who prided themselves on preserving the folly of their ancestors, and calling it wisdom, roused a formidable resistance which the ministers should not have ventured to encounter. Appeals were made to the passions and prejudices of the multitude; "no Judaism" became a signal as efficacious as "no Popery" thirty years after; petitions poured in from every quarter; but the ministers, strong in rectitude of principle, resolved to proceed. The ministers persevered and the bill was carried; a general election was at hand, and the opposition unhesitatingly availed themselves of the popular clamour to drive their political rivals from the hustings.

In consequence of the popular excitement, the parliament were forced to repeal the bill in the following year. Other nations outstripped England in the march of liberality; in America, in Holland, in Prussia, and in France, the Jews were admitted to the privileges of citizens, and have proved by their subsequent conduct that they were well entitled to the favour. The Jewish regiment in the Prussian service was the one that acquired most glory in the memorable battles of Ligny and Waterloo. In the year 1829, Mr Robert Grant, then member for Finsbury, brought in a bill for the emancipation of the Jews, but withdrew it after it had made some progress, chiefly because it was deemed imprudent further to shock the prejudices of those who had been so deeply offended by the concession of emancipation to the Catholics. The speakers against the measure, with one exception, rested their arguments on expediency.

JODRELL, Richard Paul, Esq., D. C. L., F.R.S., and F.S.A.; deputy lieutenant and justice of the peace for the counties of Oxford, Derby, Norfolk, and Middlesex; was descended from an ancient family, originally of Derbyshire, and afterwards of Staffordshire. He was born Nov. 13, 1745; and, having lost his father in 1751, lived in possession of his paternal estates for nearly eighty years. He was educated at Eton and at Hertford College, Oxford; and his attachment to his classical studies was evinced by his compositions in the Musæ Etonenses, and by subsequent more laborious publications. To the supplementary notes of Potter's Æschylus, printed in 1778, he was a contributor; in 1781 he published, in two volumes 8vo., "Illustrations of Euripides, on the Ion and Bacchæ;" and in 1790 another volume, "On the Alcestis." The modern drama, also, as well as the ancient, shared Mr Jodrell's attention. "A Widow and no Widow," a dramatic piece of three acts by him, was acted at the Haymarket in 1779, and printed in 1780, 8vo. At the same theatre, in 1783, was performed with success his "Seeing is Believing," in one act, printed in 1786. His tragedy, called "The Persian Heroine," having been rejected by the managers of the two great theatres, was printed in 1786, 8vo. and 4to. In the following year he published "Select Dramatic Pieces; some of which have been acted on provincial theatres, others have been written for private performance and country amusement." He also published in 4to. 1785, "The Knight and Friars," an historic tale, from Heywood's Γυναικειων. In 1784 he became a member of the club founded at the Essex Head, for the purpose of cheering the declining days of Dr Johnson. He was elected a fellow of the royal society in 1772, and of the society of antiquaries in 1784. He was created D.C.L., at Oxford, July 4, 1793. At the general election, 1790, he was returned one of the barons in parliament for Seaford; but by the decision of a committee, which was not given until the second session, he was declared not duly elected on the 19th of March, 1792. However, when Mr Sarjent was made clerk of the ordnance, in Jan. 1794, he was re elected for the same place, but after the dissolution in 1796 he did not again sit in the House. With advancing years, the mind of Mr Jodrell became obscured, and from the year 1822 he gradually sunk, until he reached total and absolute incapacity. He died on the 26th Jan. 1831, aged eighty-five, and left a family.

JOLLY, Alexander, D.D., bishop of Moray; died at Fraserburgh, Aberdeenshire, on the 29th June, 1838, in the eighty-third year of his age, and forty-second of his episcopate. The reputation of bishop Jolly for profound and varied learning extended far beyond the limits of the church of which he was a distinguished ornament. He devoted a long life to the studies of his profession; the whole range of theology was open to him, but the scriptures in their original languages, and the writings of the Fathers, were his familiar food; these he thoroughly digested. The result is partly exhibited in his valuable work on the Eucharist, published in 1831. In 1826, he published a "Friendly Address to the Episcopalians of Scotland, on Baptismal Regeneration," briefly tracing the success and uniformity of the church doctrine on that important subject. In the department of practical divinity, he published, in 1828, "Observations on the several Sunday Services throughout the year." By a late arrangement of the Episcopal college, the See of Moray, founded in the 12th century, exists no longer; the clergy and congregations composing it constitute parts of other dioceses.

JONES, John Gale, a political orator of some notoriety in his day, died in Somers Town, where he had long resided, on the 4th April, 1838, aged sixty-seven. He was by business a surgeon and apothecary, and was bred to that profession by Mr North, of Chelsea. When the breaking out of the French revolution inflamed the conceptions of many politicians in England, he took a lead in the debating societies, where his eloquence and zeal made him a distinguished performer. He was a member of the celebrated "London Corresponding Society." He possessed great powers of declamation, and took an active part in Westminster politics during the period when Sir Francis Burdett rendered himself so conspicuous. His connection with the British forum, where questions of the most ticklish nature were openly discussed, brought him into collision with the House of Commons; he was committed to Newgate, Feb. 21, 1810, for the publication of a scurrilous hand-bill; and after two unsuccessful motions for his release made by Sir Francis Burdett (amended by Mr Sheridan) and Sir S. Romilly, he was only liberated by the prorogation of parliament on the 21st of June, which was the same day that Sir Francis Burdett, by the same circumstance, was released from the tower. In 1810 was published "A Warning to the Frequenters of Debating Societies; being a History of the Rise and Progress of those Societies, with a Report of the Trial and Conviction of John Gale Jones, the Manager of the British Forum."

The following are the titles of Mr Jones's publications:—"Sketch of a Speech at the Westminster Forum, 1794." "A Political Tour through Kent for the purpose of promoting the cause of Parliamentary Reform, 1796." "An Oration on the character of Washington, 1797." "Observations on the Tussis Convulsiva, or Hooping Cough, 1798." "Invocation to Edward Quin, Esq. 1804." "Five Letters to the Right Hon. G. Tierney, 1806." A satirical poem, with notes, on the members of the society of the Eccentrics, published about thirty years ago, gave considerable offence at the time to those whom he lampooned.

His style of speaking was very captivating. His voice was good, and he had words at will: and if, as Mr Fox said, a good speech ought never to read well, his speeches were super-excellent, for, defying analysis, the reporter could make very little of them. The ear, however, was tickled by a concatenation of sweet sounds. We believe one of Sir Samuel Romilly's first efforts was the conducting the defence of Mr Gale Jones, who was tried at the Warwick assizes, about the time Mr Hardy, Mr Horne Took, and others, were tried in London. In private life Mr Gale Jones is described as cheerful, amiable, and unassuming; instructive in his conversation, a scholar, and a gentleman.

JONES, Captain George Matthew, of the royal navy, author of "Travels in Russia and the north-eastern countries of Europe," was brother to col. J. T. Jones, of the royal engineers, the constructor of the lines of Torres Vedras, and the officer who led the attack upon Bergen-op-Zoom. Capt. Jones commenced his naval career under the late Sir J. S. Yorke. He received his first commission in 1802; and was junior lieutenant of the Amphion 32, when that frigate conveyed lord Nelson from off Brest to the Mediterranean, on the renewal of hostilities with France, in 1803. He subsequently assisted at the capture of a Spanish squadron, laden with treasure, from South America bound to Cadiz. On the 8th Nov. 1808, he was severely wounded in a gallant but unsuccessful boat attack on the coast of Istria. On the [illegible] Aug. 1809, he again highly distinguished himself at the capture and destruction of six heavy gun vessels, seven trabacolos, and a land battery of four long twenty-four pounders, at the mouth of the Piavie, and in sight of the enemy's squadron at Venice. In Sir William Hoste's official letter on that occasion, "the prompt manner in which lieutenant Jones turned the guns of the battery on the enemy's vessels" was noticed as highly praiseworthy. He afterwards commanded the Tuscan brig, and was employed in co-operation with the defenders of Cadiz, during the siege of l Isla de Leon, in the year 1811. His last appointment was Jan. [illegible] 1817, to the Pandora of eighteen guns, on the Irish station, where he remained for a period of nearly two years. He obtained post rank, Dec. 7, 1818. In 1827, Captain Jones published "Travels in Norway, Sweden, Finland, Russia, and Turkey; also on the coast of the sea of Azof and of the Black Sea, &c. &c." in two vols. 8vo. Previously to these travels, which were undertaken by him with a view to the acquirement of professional knowledge, he had already inspected all the naval arsenals and ports of France and Holland, and in this publication he relates the result of his examination of them, as well as of those of Russia, Sweden and Denmark; thereby presenting his readers with a great store of accurate information, and much acute remark, on the [illegible] and [illegible] dition of the maritime force of most of the European powers. He received the greatest attention from the late and present Emperors of Russia, and from the Empress Mother. Shortly after his travels, he was attacked by a paralysis of the limbs; and repaired to Italy for the recovery of his health. In a state of great debility, he had the misfortune to fall down a flight of steep stone steps at Malta; three of his ribs were broken, and his shoulder dislocated; and on the third day he expired. This took place in 1831.

JUSSIEU, Antoine-Laurent de,[*] the distinguished modern botanist, to whom the science is so much indebted for the *natural* method of classification, was born at Lyons in 1748, and came to Paris in 1765, to complete his medical and scientific studies, under the direction of his uncle, Bernard de Jussieu, (of whom a short notice will be found in the body of the work.) The first years of his abode in that city were entirely devoted to these studies, and he terminated them in 1770, by a thesis for the degree of doctor in medicine. The subject of this thesis, and the mode in which it is handled, show the direction already given to his studies, and the philosophical spirit which animated him at first entering upon his scientific career. That subject was, *An economiam animalem inter et vegetalem analogia?* and it is, in fact, a concise, elegant, and perspicuous exposition of what was positively known at that period respecting the structure and functions of vegetables, and a comparison of them with the phenomena of animal life. The manner in which this question is treated was evidently a brilliant outset for a young man of twenty-two; and when Lemonnier, then professor of botany, became unable to attend at the royal garden, in consequence of the duties entailed on him by his situation as first physician to the king, Bernard de Jussieu proposed his nephew as his substitute, which was agreed to. Antoine-Laurent de Jussieu then devoted himself, with renewed ardour, to the study of that branch of science which he was thus called upon to teach.

The memoir on the family Ranunculi, which he read to the academy of sciences in 1773, proves how speedily he had turned his studies to some account, and how thoroughly his mind was imbued with the excellent principles, which, as above-mentioned, had evidently directed Bernard de Jussieu in his attempts at natural classification. In this memoir, which procured for its author admission into the academy of sciences, and in a second memoir, presented the following year, on the new arrangement of plants in the royal garden at Paris, we find, for the first time, the fundamental principles of the natural method explained with perspicuity and precision. We there find a just appreciation of the grand principles of subordination of characters, and their unequal value; a principle unknown to Linnæus and Adanson, evidently recognised by Bernard de Jussieu, but of which Laurent de Jussieu was the first to perceive the full importance, and he afterwards applied it with singular judgment. Thus, in the first of the above-mentioned memoirs, we find this passage: "We have seen, by some general principles developed in this memoir, the affinity which exists between the parts of fructification; in this affinity different degrees are perceptible: all these characters have not the same value, or the same efficacy in uniting or separating plants. Some are primitive, essential, and invariable, such as the number of the lobes of the embryo, its situation in the grain, the position of the calyx and of the pistil, the attachment of the corolla and stamens; these serve for the principal divisions. The others are secondary; they are sometimes variable, but never become essential, unless when their existence is connected with that of some of the preceding, and it is their assemblage which distinguishes the families."

Such, then, from the date of 1773, were the fundamental principles by which Antoine-Laurent de Jussieu was guided in drawing up the *Genera Plantarum.* They are expressed with much precision; and if he sometimes deviates from them, it may be perceived that he does so as a concession to facility of study, or to the old systems, rather than from real conviction. Thus in the memoir read in 1774 on the new arrangement in the Garden of Plants, he has evidently departed from the rigorous principle of the insertions, as Bernard de Jussieu had admitted them in the catalogues of Trianon, by dividing the dicotyledones into apetales, monopetales, and polypetales; but we have only to read his memoir to perceive, that his only object was to multiply the great classes, and to establish some relations between the new order and the method of Tournefort which it replaced, and which was generally known, not only to the pupils, but to the majority of the botanists of that era. We must not therefore lose sight of the origin of this part of Jussieu's classification when we wish to appreciate the method followed in the *Genera Plantarum*, which does not sensibly differ from it.

From this period up to 1785, Antoine-Laurent de Jussieu always arranged the plants in the botanic garden according to this method. The lists used in his demonstrations, worn out by use, often renewed, covered with notes and additions, and at last presenting not only the list of the genera and species cultivated, but the characters of the families and most frequently those of the genera concisely and perspicuously indicated,—all show that these eleven years were diligently employed in bringing his natural method nearer perfection. From the year 1770, Bernard de Jussieu, now seventy-one years of age, ceased entirely to take any charge of the garden, which he wholly entrusted to his nephew; his health, and particularly his sight, became feeble, and in 1777, after having experienced several attacks of apoplexy, he finished his long career—a career which had in reality so much influence on the progress of botany, although in appearance it had been productive of little.

A comparison of dates will suffice to show what portions of the natural method, as explained in the *Genera Plantarum* of 1789, are due to Bernard de Jussieu, and what to his nephew. The arrangement at Trianon, formed in 1759, proves that the classification of the families according to the cotyledons and the insertion of the stamens, is due to Bernard de Jussieu; Antoine-Laurent de Jussieu, while studying this series, and receiving his early botanical education from his uncle, probably drew up the first principles of the science; but every thing proves that the influence of Bernard de Jussieu on the works of his nephew is limited to this. In fact, Bernard de Jussieu's three note-books relative to the order of the garden at Trianon, contain not a single character either of the classes, families, or genera; there is not even an indication of any of the classes except those of the Monocotyledones and Dicotyledones. In his notes on the cards we find some generic characters accompanied with sketches of the section of the seed; but these cards, carefully preserved by his family, are far from numerous. This method of description on cards was followed by his nephew; they are frequently dated, and amount to a great number in 1774 Finally, the oldest notes used in his demonstrations by Antoine-Laurent, bear the characters of the families, which are not found in any of those belonging to Bernard. Thus the first principles of the classification are due to Bernard de Jussieu, but the profound and sagacious application of these principles and the true institution of the natural families are to be ascribed to Laurent.

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[*] Translated and abridged from a paper by M. Ad. Brongniart, in the *Annales des Sciences Naturelles*, vol. vii.

In 1785, Desfontaines succeeded Lemonnier, and A. L. de Jussieu discontinued his demonstrations as the substitute of the latter. He immediately commenced to draw up his *Genera Plantarum secundum ordines naturales disposita*, which was nothing else than the development of the writings used in his demonstrations, and which he had been bringing to perfection from the year 1774. The materials prepared for the work, may, in fact, be seen in a catalogue of genera, to which is added a list of all the new genera indicated in recent works, and which were to be arranged in their proper order in the *Genera* when completed.

The four years that intervened between 1785 and 1789 were thus employed in digesting the materials which were to enter into the composition of the *Genera*, and in the actual completion and printing of the work. The printing went on as the author drew it up, and yet the successive and definitive completion of the different parts led to no important error, so carefully had the general plan and the series of the genera been previously elaborated.

The fifty years which have now elapsed since the publication of this work, and the numerous investigations of the natural method which have taken place since that period, allow us to regard the opinion of the learned world regarding it as the opinion of posterity, and this opinion is so general and so unanimous in its favour, that it would be fruitless to insist here upon its merit and importance. However, without presuming to form a judgment on what has been already determined by the most distinguished botanists of all countries, we may be permitted to inquire, to what kind of merit the *Genera* of Antoine-Laurent de Jussieu owes the influence it has exercised, not only on the progress of botany, but likewise on that of every other branch of natural history.

Up to the time of the publication of the *Genera Plantarum*, it may be said that the natural method had not entered the field of public inquiry. The series of Linné and Bernard de Jussieu, very incomplete, and merely nominal, had no other effect than suggesting some speculative reflections to men who were in a condition to guess at their principles. The work of Adanson, destitute of general principles, and destroying natural affinities in the majority of cases, was presented besides in a form which necessarily rendered it difficult to consult, and afforded no opportunity for the author to explain the reasons which led him to form such and such relations. Thus from the date of 1763, the time when Adanson's Families of Plants were published, up to 1789—a period of twenty-six years—the natural method had made no progress in the learned world. Neither in France nor in any other country, had it acquired new followers; merely a passing glimpse had been obtained of it; its nature was not yet demonstrated. The *Genera* of 1789 had, on the contrary, a speedy influence on the direction of botanical studies. This influence was not indeed immediate, for the public attention was then turned to events of high importance altogether foreign to science. But at the end of a few years the work had come almost into general use throughout France in public teaching, not only in the instructions of the faculties and the Garden of Plants at Paris, but also in the majority of the central schools, those foci of general and varied instruction which were too speedily destroyed.

Of the botanical works in ordinary use, the Flore Française of Lamarck and of Decandolle, as well as many local floras, were arranged according to this method, and made it more generally known, and scarcely twenty years had elapsed, when an eminent botanist declared himself one of its most devoted champions, and contributed materially to bring it to perfection. Since that time it has spread over Europe, and it may be even said the whole world. Its superiority over artificial methods is generally acknowledged, and the latter are now admitted only in their proper character, namely, as more or less convenient keys for opening a way to the nomenclature of vegetables. We may add, with Cuvier, that the influence of the *Genera Plantarum* is not confined to botany. Every branch of natural history, and zoology in particular, have derived benefit from the principles which guided Jussieu, and which he has so well explained in his admirable introduction; and we are inclined to think that Cuvier, in expressing this opinion, founded it on his own experience, and that the principles alluded to regulated him in the changes he introduced into the zoological system.

To exercise in a gradual and durable manner a positive and generally acknowledged an influence on the progress of science, a work must necessarily unite two different kinds of merit; general views of a varied, important, and novel character, and as perfect an application as possible of these principles in all their details. These, in fact, are the qualities we find united in the *Genera* of Antoine-Laurent de Jussieu. The introduction, written in the most perspicuous and elegant Latin ever employed on scientific subjects, presents an exposition not only of the fundamental principles of the natural method, but as perfect a view of the structure of vegetables as the existing state of botany permitted. The characters of the classes and families afford an opportunity for applying and developing these principles; and the clearness, perspicuity, and precision of these characters, particularly such as apply to the families, still authorise us, if we keep in mind the period when they were framed, to consider them as models which few authors have equalled, and none surpassed. Finally, the notes appended to the greater part of these families form, perhaps, that portion of the work which most evinces the judgment and extensive knowledge of the author. It was in these that he often corrected the artificial tendency which a linear series always assumes, that he pointed out the multiplied relations of families to each other, and that he indicated the doubts left upon his mind by imperfect observations which he had been unable to verify, or which led to the presentiment of remote affinities, a foresight which greatly con-stripped, so to speak, the actual state of the science. Many of the improvements subsequently introduced into the natural method, are in reality, foreseen or indicated either in these notes, or in the sectional divisions of the families, or by a word placed at the end of the generic character. This last part of the work, the characters of the genera, considered by some superficial authors as a simple compilation, is not, in our estimation, the least remarkable feature of it. Certainly the work would have presented, after the characters and notes on the families, a list of the genera comprised in each of these families, as every one has since done who has followed in the same track, and this of itself would have rendered an immense service to the science, and sufficed to elucidate the natural method. Yet, without generic characters, a table of the families would have only been a subject for study and reflection, and would not have been adapted to actual use, nor formed a manual, so to speak, for the botanist; and the natural method would have been disseminated much more slowly among the learned. But in introducing generic characters, it may be asserted that they could not in general be taken by compilation, even from the most esteemed works of the period; for characters simply distinctive, suitable for an artificial system, would often be quite unadapted to a natural method; or a character which might appear trivial to the author of the former, might acquire great importance in the eyes of him who studies natural relations. Accordingly, the characters of the *Genera* have been generally traced by the hand of Jussieu, either after nature, or after the published or manuscript descriptions of botanists in whom he could place confidence, and the mention of the sources from which he has derived them, always enables us to judge of their value. If the characters of the genera, then, are partly a work of compilation, it is a kind of compilation which is indispensable in a production of this nature, and often requires more talent and discernment than direct observations. It may therefore be affirmed that the *Genera Plantarum*, published in 1789, was a work as perfect in its execution as the state of botany admitted of, and this execution is entirely due to Antoine Laurent de Jussieu.

With regard to the principles of the classification, the fundamental basis of the method, they were the same as those explained by the author in his memoir on the series of plants in the garden of Paris; that is to say, the same as those admitted by Bernard de Jussieu, and deduced from the number of the cotyledones, and the relative insertion of the parts of the flower, to which were added such as are derived from the presence and structure of the corolla. The adoption of these characters, as the base of the first classification of the dicotyledones, has perhaps contributed to interrupt the relations which Jussieu no doubt perceived to exist between the apetales and the polypetales, and in some rarer instances between the monopetales and those two last classes. But it is necessary only to refer to the memoir above-mentioned, to perceive that the desire of multiplying the number of the classes, to render the natural method of more easy use, determined the author, in this instance, to depart from what he considered the rigorous principles of his method. If any blame attaches to the author of the *Genera* relatively to the classification he has adopted, it arises from his having made this concession for the purpose of rendering his work of easier application; for it is probable that the characters furnished by the corolla will one day be dispensed with, to a greater or less extent; and this, to appearance, will be the most important modification which the method of the *Genera Plantarum* shall have undergone, although in reality it will merely consist in reverting to the original principles of the author.

The public events which almost immediately succeeded the publication of the *Genera Plantarum*, necessarily diverted the author's attention from his botanical studies. The period which elapsed between 1789 and 1800, was but little adapted to the peaceable study of natural history: Jussieu employed it in rendering himself useful both to his own species and to science, by lending his aid in improving the hospitals, and in organizing the museum of natural history.

In 1790, he was nominated by his section member of the municipality of Paris, and was entrusted, under that title, with the management of the city hospitals; he fulfilled these duties till the year 1792.

In 1793, the garden of plants, or king's garden, was remodelled under the name of the museum of natural history. All the persons appointed, under different titles, to teach or take charge of the collections were raised to the rank of professors, and entrusted with the management of the establishment. M. de Jussieu who, like Vaillant and Bernard de Jussieu, had hitherto been merely a demonstrator, was appointed, with the title of professor of rural botany, to teach that science in the country. He thus shared the task of teaching botany with his colleague Desfontaines; and his herborisations, attended by a crowd of young students, and distinguished amateurs, contributed to spread a taste for the study, and to diffuse the enlightened principles which he had introduced into the science; and his followers were predisposed to give a favourable reception to the latter, when they witnessed the simplicity and kindness of him who demonstrated them.

Having been chosen successively by his colleagues to be director and treasurer in the administration of the museum, he rendered important services to the establishment in these capacities, particularly at the difficult period of its reorganization, when, notwithstanding the obstacles which political events often opposed to the prosperity and even the existence of the museum, he found means, by his zeal and activity, to perform services of the highest advantage to it.

He resumed the publication of his botanical researches when the *Annales du Museum* were commenced in 1802. Besides a series of notices on the history of the Museum of natural history, we find in the early volumes of this collection many memoirs on new or imperfectly described genera; or on families which recent discoveries or more exact observations have enriched with new genera. Thus the Amaranthæ, the Nyctagineæ, and the Onagrariæ were successively submitted to a new examination. It may be perceived that his object in these investigations was to bring the *Genera Plantarum* and the natural method nearer perfection; but this purpose became more evident in the fifth volume of the collection, in 1804, when he began to publish a series of memoirs devoted to the examination of the general characters of the families derived from the fruit, and confirmed or rectified by the observations of Gærtner. He mentions at the same time the additions which these families had received since the appearance of the *Genera*, and discusses questionable points of organization or synonymy, always displaying remarkable skill in the examination of obscure genera, often ill described by their authors, and whose structure he refers to their true type with singular discrimination, as appears from his decision having been almost invariably confirmed by more recent observations. This revision forms the subject of fifteen memoirs, published between the years 1804 and 1819, and embraces all the families of the apetalous, and monopetalous dicotyledones, as well as the epigynous, and hypogynous polypetales.

Always desirous to complete the view of the vegetable kingdom presented in his *Genera Plantarum*, and to make that work keep pace with new discoveries and the progress of science, Jussieu published successively other memoirs, in which he established new genera, occasioned either by his having become better acquainted with their structure since the publication of his original work, or by the numerous discoveries resulting from recent scientific travels, which had introduced into collections so many forms either wholly new, or associating with genera hitherto insulated, and which he had not therefore ventured to consider as the types of particular families. It was thus that the author of the *Genera*, by being the first to add to the edifice he had himself reared, showed that he considered it susceptible of modifications and improvements; for, like every one of an elevated mind, he was aware that the sciences are never stationary, and admitted that the natural method must become more perfect in proportion as botany becomes more extended.

In this way he added to the families already established in 1789, those of the Loaseæ, the Passifloreæ, the Monimieæ, the Lobeliaceæ, the Polygaleæ, and the Paronychieæ. Finally, many of these memoirs are occupied with the examination of obscure genera, whose relations to known genera, and natural families, could be with difficulty established; of this description are the memoirs on the Phelipæ of Thunberg, the Hydropityon of Gærtner, many genera of the Laurineæ which ought to be united into one, and on different genera of Loureiræ. Perhaps there are few memoirs of great extent which evince more strikingly than these short notices, the extensive knowledge and discrimination of Jussieu: we perceive at every instant how the appreciation of characters, their value, their subordination, or their incongruity, proved a safe guide to him in this difficult investigation. We there see disclosed, so to speak, the method he followed in ascertaining the alliances of numerous exotic genera, often very imperfectly known, and which he has almost always succeeded in classing correctly in his immortal work.

The last memoir published by Jussieu appeared in 1820, in the sixteenth volume of the Memoirs of the Museum. It related to the family of the Rubiaceæ, and presented all the genera arranged and described, after the manner the author intended to follow in a new edition of the *Genera Plantarum*, which he then projected, and for which he had constantly been employed in providing materials. This last wo k, published when he was seventy-two years of age, is worthy of its predecessor of 1789: we find in it the same arrangement, the same distinctness of ideas, the same simple and precise definitions.

From this period Jussieu's sight became so weak that he was obliged to relinquish the examination of nature, and confine himself to studying the works of others. His only contributions to science are some articles inserted in the Dictionary of Natural Sciences, relating either to the families of plants, or such as are mentioned by travellers under their vulgar names, which he endeavours to refer to their proper genus or family. These consisted of materials collected long before, and we still recognise in them a mind which joined a most extensive erudition to an intimate knowledge of nature.

We ought also to mention the article on the natural method, in the same collection, published in 1824, in which the same skilful hand has given, with his usual perspicuity, the history of the natural method in botany, and explained the principles on which it is founded.

Finally, in the last years of his life, from the date of 1826, his duties relative to the Museum of Natural History having been undertaken by a son worthy of such a father, he passed a great part of the year in the country, and divided his time between the reading of the most modern books on botany, and drawing up an analysis of such of the works as appeared to him of most utility to science.

Combining these recent discoveries with the knowledge he had acquired in the course of his long career, he made them the subject of a new edition of the introduction to his *Genera Plantarum*.

In this *proœmium*, which is written in the same pure and elegant Latin as the first Introduction, we find some of the same ideas as he advanced in 1789, particularly those on classification: but it at once appears that he was a stranger to none of the modern discoveries in anatomy and physiology, for he conceived that they all should concur in perfecting the natural method, the base of which should be formed by all the parts of the organization of vegetables. He was engaged almost to the close of his life in completing this work, which turned his attention to his past studies, and agreeably occupied his mind. But his sight had by this time become so weak that it could no longer direct his hand, and he was often obliged to employ the pen of another; but this impediment did not make him discontinue his exertions.

If the labours of M. de Jussieu entitle him to a place in the first rank of savans, he may in addition be held up as a model for amenity of character. He was full of kindness to those who devoted themselves to the study of the sciences, and gave every encouragement to such as distinguished themselves in the pursuit. Entirely devoted to the advancement of botany, and searching only for truth, he candidly acknowledged his own errors, and pointed out those of others without asperity. He was never drawn into the polemics of [illegible] no example can be cited, either in his works or in his numerous memoirs, of a single word calculated to injure any of his contemporaries, and yet he was the means of advancing the science much more than those who have combated in support of their views. His were founded on truth, and needed no adventitious support; left to themselves they have gradually wrought their way into [illegible], till they are now generally admitted. He had the happiness, therefore, to join to the distinction he acquired by his scientific superiority, the friendship of all who were able to appreciate him; and the young, to whom he was remarkably kind, entertained a most filial veneration for him. Surrounded by the marks of esteem and friendship, entirely devoted to the study of the sciences, and never extending his ambition beyond this circle;—happy in the bosom of a numerous family, and seeing himself survive, so to speak, in a son worthy to bear his name, and who had become even during his lifetime his colleague and successor,—he passed his long career in the enjoyment of a happiness which he owed as much to himself as to the circumstances in which he happened to be placed; and at last, in the eighty-eighth year of his age, on the 15th September 1836, a short and not very painful disorder brought to an easy termination a life which had been spent in so much usefulness and tranquillity.

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KATER, Captain Henry, F.R.S; an eminent mathematician, was born at Bristol, April 16, 1777. His father was of a German family; his mother the daughter of an eminent architect: both were distinguished for their scientific attainments, and united in inspiring him, from his earliest years, with a taste for physical investigations. After some time his father, who designed Henry for the profession of the law, began to discourage his exclusive devotion to abstract science, and he parted from mathematics as reluctantly as Blackstone from his poetry. During the two years that Mr Kater was in a pleader's office, he acquired a considerable portion of legal knowledge, on which he valued himself through life; but the death of his father, in 1794, permitting him to resume his favourite studies, he bade adieu to the law, and obtained a commission in the 12th regiment of Foot, then stationed in India. During the following year he was engaged in the trigonometrical survey of India, under colonel Lambton, and contributed greatly to the success of that stupendous undertaking. About the same time he constructed a peculiarly sensible hygrometer, and published a description of it in the "Asiatic Researches." His unremitted study during seven years in a hot climate greatly injured his constitution, and was the cause of the ill state of health under which he suffered to the close of his life. After his return to England, he qualified himself to serve on the general staff. He went on half-pay in 1814, from which period his life was wholly devoted to science. His trigonometrical operations, his experiments for determining the length of a pendulum beating seconds, and his labours for constructing standards of weights and measures, are well known; they combine patient industry, minute observation, and mechanical skill, with high powers of reasoning. Most of the learned societies in Great Britain and on the continent testified their sense of the value of capt. Kater's services, by enrolling him amongst their members. The emperor of Russia employed him to construct standards for the weights and measures of his dominions; and was so pleased with the execution of them, that he presented him with the order of St Anne, and a diamond snuff-box. The even tenor of capt. Kater's life was rarely interrupted. The loss of his daughter, who fell a victim to her ardour for science in 1827, was the severest affliction by which he was visited. She died in her seventeenth year, after having displayed mathematical powers of a high order, and a love of science that even increasing physical weakness could not destroy. Most of capt. Kater's publications appeared in the "Philosophical Transactions," to which he was a very constant contributor. He died at his house, York Gate, Regent Park, London, April 26, 1835.

KENDAL, or KIRBY KENDAL (the Church in the vale of Ken), is the largest town in Westmoreland. It is pleasantly situated on the banks of the Ken, or Kent, which flows rapidly through the fertile valleys of a tract of country, that after the conquest was designated the barony of Kendal, and was the reward of Ivo, or John, brother to the earl of Anjou. His lineal descendant, William Steward, of the household of Henry II., assumed the name of Lancaster, perhaps, from the circumstance of being governor of Lancaster castle. From this family the barony descended, through the noble houses of Bruce and Ross, to the Parrs. Sir William Parr, of Kendal, having faithfully served king Edward IV., in his wars with France and Scotland, was created a knight of the garter. Catharine Parr, his grand-daughter, was born here, and became the last queen of Henry VIII.; her brother, Sir William Parr, was by that monarch created first lord Parr of Kendal, and afterwards earl of Essex and K.B. By Edward IV., he was raised to the dignity of marquis of Northampton. The castle, the baronial seat of the above distinguished families, occupies a grassy hill, on the east side of the river; of this structure, four broken towers, and part of the outer walls, only are now remaining. Opposite the castle, and overlooking the town, is Castle-law Hill, an artificial circular mount, about thirty feet high, surrounded at its base by a deep fosse and a high rampart strengthened by two bastions on the east; the summit, which is flat, is crossed by a ditch, and defended by a breast-work of earth. This mount is of greater antiquity than the castle, and as its name imports, was one of the spots on which, in ancient times, justice was dispensed to the people. On this eminence, an obelisk, commemorative of the Revolution of 1688, was erected by the inhabitants of Kendal, in 1788. The church is a spacious gothic structure, with a square tower, containing ten bells; it has three chapels, memorials of the ancient dignity of three neighbouring families, the Bellinghams, Stricklands, and Parrs, and contains many ancient monuments.

In the latter part of the fourteenth century, the manufacture of woollen cloth was introduced at Kendal by emigrants from the Low Countries; and laws were enacted by parliament for the regulation of this branch of industry, in the reigns of Richard II. and Henry IV. The green druggets made in this place, formed, for several centuries, the common wear of the lower classes, and became celebrated under the denomination of 'Kendal green.' Before the introduction of these manufactures, the wool of this country was exported to the Netherlands. At present, the principal articles of manufacture are, cottons, linseys, druggets, coarse woollens, worsted stockings, hats, bonnets, and serges. In the neighbourhood are numerous corn and paper-mills, together with several of various descriptions for the preparation of cloth. Below the town are mills where gunpowder is manufactured. The sawing and polishing of marble—which is brought from the adjacent mountainous neighbourhood—furnishes employment for many of the inhabitants. The manufacture of combs of all descriptions, and spinning of wool, are also among the sources of commercial industry pertaining to this town. The neighbourhood abounds with limestone, of which many of the houses are built. Population of Kendal in 1831, 10,015.

KESWICK; a town in Cumberland, situated in a valley, near the lower end of Derwentwater, 293 miles from London. The parish-church of Crosthwaite stands about three-quarters of a mile northwest of the town, and the lofty mountain of Skiddaw is about three miles distant. The woollen manufacture, and the manufacture of black lead pencils, are the chief occupations of the inhabitants. From the beauty of the surrounding scenery, lauded and patronized by Wordsworth, Southey, Coleridge, De Quincey, and Wilson, Keswick forms a common stage to numberless tourists, and abounds in excellent inns and lodging-houses. Population of the town in 1831, 2159.

KIEFFER, M., professor of Turkish at the college of France, and vice-president of the Asiatic Society, was born at Strasburgh in 1767, where he studied under Oberlin, Schweighäuser, and Dahler. He was at first intended for the church, but the study of the oriental languages, a knowledge of which was required to qualify him for the sacred functions, so captivated him, that he resolved to devote himself wholly to them. A residence of some years at Paris confirmed him in his resolution, and enabled him to carry it into effect. Admitted, in 1794, into the bureau of the ministry for foreign affairs, he was sent, two years after, to Constantinople, as secretary and interpreter to the embassy, of which general Aubert du Bayet was the head. In 1798, when a rupture took place between France and the Porte, M. Kieffer, along with the Chargé des Affaires, was sent to the Castle of the Seven Towers, where his time was devoted to study, and the enjoyment of the society of M. Ruffin, whose instructions, combined with the unwearied perseverance of M. Kieffer himself, enabled the latter to acquire that profound knowledge of the Turkish language, which has since been so bonourably displayed in the translation of the New Testament, published at the expense of the London Bible Society. As a proper reward for his services, he was appointed professor of Turkish in the college of France, and in 1815 he received the decoration of the Legion of Honour. But it was not merely as a literary man that M. Kieffer distinguished himself, and we should have a very imperfect idea of his vast and useful activity to view him merely as an orientalist. M. Kieffer found time to engage in many useful associations for the promotion of public morals and education, and to advance the interests of religion, in its tolerant sense. He was appointed chief agent for the London Bible Society in France, and a member of many other religious and philanthropic societies. To diffuse the Holy Scriptures throughout France, and to recommend their perusal, was his chief study. In one year he distributed in this way [illegible] copies of the Bible, which in almost every instance was accompanied with a letter in his own hand. he also corrected the proof sheets of every new edition. His death took place in 1832. Modest and kind in his intercourse with the world, he left behind him the regrets of all good men.

KILDARE; a county of Ireland, in the province of Leinster, comprising, according to the ordnance survey, an area of 392,435 acres, of which 66,447 are unprofitable mountain and bog. The eastern portion of the bog of Allen, including Lullymore, Timahoe, Mouds, and Clane bogs, and covering an area of about 36,480 acres, lies wholly within this county: some of this district may be said to be exhausted for the purposes of fuel, but the residue, which is a complete peat, averages twenty-five feet in depth, and lies for the most part 250 feet above sea-level, having a fall towards the different neighbouring rivers, whereby the drainage and reclamation of the whole appears practicable, and not, comparatively, expensive. The other parts of the county are dry, rich, and productive in corn, which finds a ready and good market in Dublin, being conveyed thither by the royal and grand canals. In the centre of the county is a spacious verdant plain, called the *Curragh of Kildare*: this is now the Newmarket of Ireland, and the soil of this beautiful common, a dry loam reclining upon gravel, affords a turf more elastic and better adapted for running than that of the great race-course of England. Its area is about 5000 acres. The name of Kildare is said to be derived from Chille-dair, a forest of oaks, which occupied this county, and in the centre of which was the Curragh, or plain. On its borders St Bridgid, a vestal virgin, converted to Christianity in the sixth century, is said to have kept watch over the sacred fire, in her cell, the ruins of which are still shown. Few counties in the island are better watered by fine rivers, and none, Dublin excepted, possess the singular advantage of two noble lines of inland navigation communicating with the metropolis. The northern baronies are watered by the Blackwater, the Boyne, and the Liffey rivers; while the Barrow, the Liffey, and the Grees amply supply the southern parts. The grand canal passes directly through the bogs of Allen and Clair, and crosses the river Liffey by an aqueduct; the royal canal passes across the northern baronies into the county of Westmeath. Salmon and trout are taken in all these streams, and the fishery of the Boyne has always been estimated highly.

Kildare is almost entirely an agricultural county, the produce being disposed of in the metropolis. Vast quantities of turf are also carried, by means of canals, to the Dublin market. Some attempts have been made to establish the cotton manufacture, and large mills were built near Clane, Leixlip

lip, and other places, but they fell into decay. One, however, built more recently at Inchyguire, near Ballytore, is in full operation, and a small woollen manufacture is carried on at Celbridge. The towns in Kildare are unimportant. Besides Kildare itself, to be noticed presently, it contains the incorporated assize and market-towns of Nass and Athy; the market and post-towns of Kilcock, Maynooth, Celbridge, Monastereven, Timoline, Rathangan, Leixlip, Kilcullen-bridge, and Newbridge; also the post-towns of Castledermot, Clane, and Ballytore. The county is partly in the diocese of Dublin, but chiefly in that of Kildare. Population in 1831, 108,424.

KILDARE; a small market-town in the above county, twenty-five miles, W. S. W. from Dublin, on the mail-coach road to Limerick. It was anciently a city and place of importance, and is still the seat of a diocese. The old abbey is much dilapidated. An ancient round tower, 130 feet high, stands in the churchyard. The diocese was founded probably at the close of the fifth century. It extends over most of Kildare, and into the King's and Queen's counties, measuring forty-five miles in length by twenty-nine in breadth. The total number of parishes in the diocese is eighty-five, comprised in forty-one benefices. Population of town of Kildare, 1753; of parish, 2541.

KILKENNY; a county of Ireland, in the western portion of the province of Leinster. It comprises, according to the ordnance survey, 536,686 statute acres, of which 417,117 are cultivated, and 96,569 bog and mountain. It is partly in the dioceses of Cashel and Leighlin, but chiefly in, and comprehending the greater part of the diocese of Ossory, in the province of Dublin. It is divided into the baronies of Gowran, Fassadinan, Galmoy, Crannagh, Shillelogher, Kells, Knoctopher, Iverk, and Ideagh, to which may be added the county of the city of Kilkenny and the liberties of the town of Callar. The principal places within these baronies are, the city of Kilkenny, the corporate towns of Callan, Thomas-town, Gowran, Inistioge, and Knocktopher, which were all boroughs previous to the union with Great Britain, and the non-corporate towns of Graigue, Durrow, Ballygarret, Castlecomer, Freshford, Urlingford, Goresbridge, and Kells. The dense population of this great county are engaged in agriculture, in the collieries, flag, and marble quarries, and in the manufacture of blankets and coarse woollens. Wheat and other sorts of grain are raised in abundance, in all parts of the county, and there are extensive dairy-farms in the district called the Walsh Mountains. The cattle are a mixed breed, consisting of the Irish stock grafted upon the long-horned English. The breed of sheep is also improved by crossing with the Leicestershire. The native horses are lively, active, and hardy, and well adapted to the farmer's use. Few are bred in the county, and the Suffolk sorrel is preferred by any who do attempt to breed. Heifers and bullocks are used in draft by the farmers, in the vicinity of the city of Kilkenny. Traffic is much promoted by the navigation of the Barrow, Suir, and Nore, and is still susceptible of further improvement.

The calcareous districts of Kilkenny are frequently found to conceal vast excavations, caused either by subsidence, or by the action of subterranean rivers. There are many such in the limestone region of Kilkenny, of which those of Dunmore and Paulstown are the most spacious. The best granite within the county is raised in Mount Loftus quarry; it has a light yellow cast, and is compact and fine-grained. Flag quarries are worked at Conahy, Kellymount, Shankill, &c., and occupy a great number of hands. The flags consist of a siliciferous argillite, and are usually tinged with iron. Limestone is found near the surface in almost every part of the county, and is used both for agricultural and architectural purposes. The Kilkenny marble, as it is generally called, is raised in the black quarry, half a mile from the city of Kilkenny. The stone contains a great variety of impressions of madrepores, bivalves, and turbinate shells, and is worked into beautiful chimney pieces, sepulchral ornaments, &c. The cutting and polishing are effected by means of an ingenious mill. Amongst the minerals of this county the many beds of coal are to be noticed. The coal raised here is of the stone, or non-flaming kind. It burns dully, casting, like charcoal, a steady and strong heat. It is superior to all other fuel for drying malt, and is excellently adapted for the forge or other works where steady heat is required, void of smoke. The chief works, which are called the Lordship Collieries, lie around the town of Castlecomer. At Donane and other places, coals have been raised, but not so extensively as at Castlecomer. There is a spa well at Ballyspellan, in the parish of Fartagh, beneficial in cases of obstruction of the viscera. This fountain is the subject of the witty verses from the pen of Dr Sheridan, the friend of Dean Swift. Chalybeate springs also exist in the city of Kilkenny, at Jerpoint abbey, near Coocullen church, besides several of weak proportion in and near the Castlecomer collieries. Population of the county in 1831, 169,945.

KILKENNY; an ancient city of Ireland, and, including Irishtown, a county of itself, and the seat of the diocese of Ossory. It is situated on the Nore, which separates the portions locally known as the Canice or Irishtown, and Kilkenny or Englishtown; the former being on the right, the latter on the left bank of the river. These distinctions, however, are becoming obsolete. Kilkenny is twenty-four miles N.E. by N. from Clonmel, and fifty-seven S.W. from Dublin, on the mail coach road to Cork. It is seen to great advantage from the high eastern bank of the river, with its castle, cathedral, and numerous remains of ancient religious edifices. The streets, however, are very irregular, and the suburbs miserable. The castle belongs to the Ormond family. It was originally built in the twelfth century. The cathedral of St Canice, built in 1202, is one of the finest ecclesiastical edifices in the kingdom. The palace of the bishop of Ossory is connected with it, as also a remarkable round tower. There is a fine promenade, called the Mall, extending nearly a mile along the banks of a canal, and also along the banks of the Nore and the base of the castle. The grammar-school, called the college of Kilkenny, stands opposite to the castle on the other side of the river, and boasts of having educated, among other eminent men, Swift, Congreve, Farquhar, and Bishop Berkeley. Kilkenny formerly carried on a considerable trade in the manufacture of woollen cloths and blankets, which has declined. The chief occupation of the inhabitants is connected with the sale of agricultural produce. Population in 1831, 23,741.

KILLARNEY; a town of Ireland, in the county of Kerry, 167 miles S.W. from Dublin, on the present mail-coach road to Cork, from which city, it is distant forty-five miles. It consists of two main streets, off which branch several lanes and alleys. There is little business carried on in the town beyond the retail trade. A variety of ornamental articles are made from the arbutus tree, and sold to strangers visiting the lakes. During the autumn and summer months, the place presents an animated appearance from the influx of strangers. The mansion of lord Kenmare, with its parks and grounds, adjoins the town. Population in 1831, 7910; of parish of Killarney, 11,333.

The *Lakes of Killarney*, so celebrated for their romantic scenery, are situated about a mile and a half from the town, on the confines of a chain of lofty mountains. The space included between this chain and the ocean on the west, containing upwards of thirty square miles, is entirely occupied by other mountains of still greater magnitude, amongst which are those called Macgillicuddy's Reeks, the most elevated in Ireland. In general, the disposition of these mountains is very irregular; but as they approach the sea, they form short ridges, terminating on the coast in bold and rugged headlands. This mountainous region abounds with lakes. They are mostly found in the depths of the valleys, but some are situated in the sides of the mountains, at a great elevation, in cavities, resembling the craters of volcanoes. In the vicinity of Killarney, on the summit of the mountain called Mangerton, there is one of these lakes many hundred feet above the level of the sea, the natives style it the Pit of Hell, but it is familiarly known by the name of the Devil's Punch-Bowl. After heavy rains, it discharges a large stream, which precipitates itself down the mountain in a succession of cataracts, distinguishable by their white foam at the distance of many miles. Of all the lakes of Kerry, however, the largest and the most remarkable are those of Killarney. They may be considered, indeed, as Mr Weld observes, as an immense reservoir for the waters of the surrounding country, supplied by the overflowings of other lakes, by rills from the adjoining mountains, and by rivers which fall into them, after having been augmented during a long course by countless tributary streams. The only outlet to this extensive basin is the clear and rapid river Laune, which conveys the surplus water into the Atlantic ocean, through the bay of Dingle.

The Lakes of Killarney are three in number, —that is to say, there are three distinct bodies of water; each of them, however, communicates with the other two. We have said that these lakes are upon the confines of a range of mountains. One of them is, indeed, on the mountains—completely embosomed within lofty heights; the others lie at the foot of the mountains. These two lower lakes are bounded on one side only by mountains; in the opposite direction they are open to a cultivated country, whose surface is diversified by innumerable hills. They are nearly upon the same level, and lie contiguous to each other, being separated merely by a narrow peninsula and some small islands, between which there are channels passable for boats. The Upper Lake lies on the mountains above, at the distance of three miles from the Lower Lakes; a navigable stream, however, descends from it, and communicates with each of them, by dividing into two branches. This lake on the mountains is called, from its situation, the "Upper Lake;" of the others below, the larger one is called the "Lower Lake," and the smaller "Turk Lake," from an adjacent mountain bearing the name of "Turk."

The *Upper Lake* is about two miles and a half in length, and, from its numerous indentations, of very irregular breadth. It is thickly studded with islands, and surrounded with mountains.

The *Lower Lake* is five miles and a quarter long, its greater breadth is two miles and a half, and its mean breadth one mile and a half. The water of the lake is in many parts very deep, and tolerably clear. Smith says that "the common people hereabouts have a strange romantic notion of their seeing, in fair weather, what they call a city at the bottom of this lake, in a particular part of it, which they say is more than sixty fathoms deep." This is not, however, the only "romantic notion" entertained by the common people concerning Lough Lein, as the lake was anciently called. The "Legend of O Donoghue and his White Horse" surpasses it vastly, in point of interest and extravagance, as indeed it surpasses most of the legends current in that stronghold of tradition, the south of Ireland.

Ross Island is the largest of those contained in the Lower Lake. It is sometimes called a peninsula, for its separation from the main land is but partial. A morass occupies the intervening space, and is reduced to a narrow isthmus by inlets on each side. A small canal through this isthmus, just admitting the passage of a single boat, is the only separation between the island and the main land during the summer, and even this sometimes disappears. In winter the whole isthmus is overflowed, and Ross becomes then perfectly insulated. The shape of this island is very irregular. It stretches out for some distance from the eastern shore towards the middle of the lake, and then throws forward a projection to the northward. Thus there is formed between the island and the main land a bay, the head of which is bounded by the isthmus connecting them, and the mouth of which opens to the northward; this is called Ross Bay. The common place of embarkation for strangers at Killarney is at the head of Ross Bay, at a quay under the walls of the castle; this being the nearest part of the lake to which there is a communication from the town by a carriage-road. From the town Ross castle is about a mile and a half distant. Ross castle is said to have been built by a powerful sept, or tribe, of O'Donoghoes; the name of O'Donoghoe-Ross was given to this family to distinguish it from that of O'Donoghoe-More. It was a place of strength in the time of Cromwell, and is celebrated for the obstinate resistance which it made to the attacks of the parliamentary army under general Ludlow, in the year 1652.

Next to Ross Island in size, is that of *Innisfallen*, the most beautiful, fertile, and interesting of all in the lower lake. It is in extent about eighteen acres, and contains a small banqueting house, and the ruins of an abbey founded in 600.

Turk Lake is about two miles in length, and one in breadth. The island of *Dinis* on this lake is richly wooded, and contains a cottage for the refreshment of visitors. The promontory of Mucross forms the northern boundary of the lake.

KILMALLOCK; an ancient town in Ireland, situated sixteen miles from Limerick, on the road leading to Cork. It is principally [illegible] the extraordinary contrast between its former greatness and its present fallen condition; on account of which it has been styled the "Balbeck of Ireland." Archdale, speaking of it, says, "Kilmallock was formerly a town of great note, being walled, and the houses beautifully and elegantly built of hewn stone; it is now in ruins, yet has a greater share of magnificence even in that miserable state than any town in Ireland." Sir Richard Colt Hoare, thus describes its general appearance: "The first view of this place is singularly striking, it has the appearance of a town suddenly deserted and left in ruins. I entered it by the side of a lofty turretted gateway, leading into the principal street, which is formed on each side by a line of houses, excellently well built of stone; a certain uniformity prevails in the style of architecture, and in a great measure ascertains their date. Many of these houses have been perfectly gutted, and have only the outward shell of wall remaining. This town was fortified with a strong wall, and (as I was informed,) had five gates, of which two only now remain; the one on the road to Limerick, called St John's Gate, the other leading towards Charleville." According to others there were originally but four gateways; the two which remain are built in a massive style, and have a solid heavy effect, "with a strong resemblance to Spanish or Moorish architecture." The Limerick gate looks towards the north: and the Charleville gate towards the west. A portion of the town-wall, still retaining in some places its original height, may be traced uninterruptedly from the one gate to the other; it is supposed to form a fourth part of the whole rampart. It is the main street, however, which conveys the best idea of the ancient consequence of Kilmallock, and likewise, it may be added, of its present degradation. On each side are the remains of houses built of hewn stone, and apparently on an uniform plan; the workmanship is so excellent, that the walls of many of them are still in perfect preservation, only roofs and floors being wanted to make these as complete as when formerly inhabited. Population of the town, 1213; of parish, including town, 2834.

KILRUSH; a thriving little sea-port of Ireland, in the county of Clare, twenty-one miles S. W. from Ennis, and 130 from Dublin. It is situated about fifteen miles from the mouth of the Shannon, near the head of a small creek or inlet, which forms a good bay for vessels. The trade of the place consists in the export of corn and butter, and occasionally flags and slates. The vicinity is rich in natural productions, besides slates and flags, limestone, gritstone, coal, manganese, and potters' clay are found here. The cliffs along the shore produce samphire and mushrooms, and the strands afford dilisk and leaver, from the latter of which slake is made. In the town friezes, flannels, and coarse linens are manufactured. Population of town in 1831, 3996; of parish, 9732. Besides this *Kilrush*, there are five other parishes bearing the same name, in Ireland, namely, one in Kildare, with 704 inhabitants; one in Kilkenny, with 754 inhabitants; one in Waterford, with 724 inhabitants; one in Wexford, with 2731 inhabitants; and one in county Dublin, the inhabitants of which are not separately enumerated.

KINCARDINE signifies in Gælic, the *clan of friends*; and the name is applied to several parishes and towns throughout Scotland, besides to the county noticed below. There is a parish and village of *Kincardine* in the counties of Ross and Cromarty, with a population in 1831, of 1887;—there is a parish of *Kincardine* in the southern part of Perthshire, district of Menteith, with a population of 2456; there is a parish of *Kincardine* in Inverness-shire, incorporated with Abernethy;—there is a parish called *Kincardine O'Neil* in Aberdeenshire, with a population of 1936;—there is a *district* in Aberdeenshire with the same name, which embraces a population of 15,415;—and finally, there is a considerable thriving sea-port town called *Kincardine* in the parish of Tulliallan, situated on the shore of the Frith of Forth, at the distance of five miles east from Alloa, with a population, including the parish, of 3550.

KINCARDINESHIRE; a county of Scotland, extending along the coast of the North Sea about thirty-two miles, and containing, by accurate measurement, 243,444 English acres. It is bounded on the north by Aberdeenshire, and on the south-west by Forfarshire, the sea forming its other boundaries. It was anciently and is still popularly called *the Mearns*, from its having, according to tradition, become the property of Mernia, a brother of king Kenneth II.: another brother, called Angus, conferring his name upon the adjoining county of Forfar. The more modern appellation of the shire is derived from the village of Kincardine, formerly its chief town; but from which the courts of judicature were removed in the reign of James VI., to Stonehaven, where they are still held, Kincardine having now dwindled into a mere hamlet or farm-steading. The surface of the county bordering on the sea, is partly rugged, and partly flat, with a gradual rise from the coast to a fine level elevation of about 150 feet, intersected by a range of the Grampian Hills, forming the north side of the How, or Hollow of the Mearns, which is the north-eastern extremity of the vale of Strathmore. South of this tract the soil is fertile, and recent improvements in agriculture have made it exceedingly productive; but the north-west district being mountainous, is only appropriated to pasturage. It is watered by numerous streams, of which the rivers Bervie, Carron, Cowie, and North Esk, are the chief, and contains, besides the county town of Stonehaven and the royal burgh of Inverbervie, five or six small towns, as Johnshaven, Lawrencekirk, Fettercairn, Fordoun, and Auchinblae, with several elegant mansions of the Scottish gentry, and various remains of Roman and other ancient places of strength, such as the Green Castle, Dunnottar Castle, Fenella's Castle, the Kame of Mathers, &c. There is no coal or marl in the county, and very little limestone, but the latter is imported in large quantities for agricultural purposes. Population of Kincardineshire in 1821, 29,118; in 1831, 31,431.

KINGSTON; a town of Ireland, situated on the southern shore of the bay of Dublin, five miles E.S.E. from that city. It was formerly called Dunleary, but received its present appellation in honour of George IV. embarking for England at this port, after his visit to Ireland in 1821; in commemoration of which a small obelisk stands near the harbour. The harbour, the largest yet formed in Ireland, was commenced in 1816, and from that period the prosperity of the place may be dated. From a small fishing village, it has risen rapidly to an elegant metropolitan suburban town, containing ranges of handsome buildings, inhabited chiefly by opulent citizens of Dublin. Intercourse with the metropolis is greatly facilitated by the Dublin and Kingston railway, which was opened to the public on the 17th Dec. 1834. Population of Kingston by last census, 5736.

KINROSS-SHIRE; one of the smallest counties of Scotland, bounded on the north by Perthshire; on the west by Clackmannan; and on the east and south by the shire of Fife, from which latter county it was disjoined in the year 1426. It extends from east to west about eleven miles, and from north to south nearly ten. This district exhibits a beautifully diversified surface, and includes the fine sheet of water termed Loch Leven, whose romantic banks are adorned with several elegant mansions. From the north side of this expanse the country gradually assumes a gentle acclivity; while on the opposite side the ground rises precipitately, and has a much more rugged appearance. Agriculture is the chief employment of the inhabitants, the county being much divided into small farms, each owned in feu by its tenant at a trifling quit rent. The higher parts of the county are chiefly composed of whinstone, between the layers of which lead-ore is frequently found; limestone, ironstone, and coal, are also met with in great plenty. The only town in the shire is Kinross, noticed below, and the next place in importance is the populous village of Milnathort, commonly called the Mills of Forth, in both of which the manufacture of linen and cotton are carried on to some extent. The county is joined with that of Clackmannan under one sheriff-depute, but there is a resident sheriff-substitute at Kinross. Population in 1821, 7762; in 1831, 9072.

Kinross, the capital of the above county, is situated on the north-western shore of Loch Leven; distant from Edinburgh twenty-seven miles; from Perth, seventeen. It is a place of considerable antiquity, and was originally dignified by a castle, situated on a promontory jutting into the lake, and of which the town was a dependence. This stronghold was long the residence of the earls of Morton, but it was removed, and an elegant structure built in its stead in 1685, by Sir William Bruce of Kinross, the celebrated architect. The town itself has recently been much improved by the erection of many good buildings. The chief occupation of the inhabitants is the weaving of linen and cotton goods. Population of town and parish of Kinross in 1821, 2563; in 1831, 2917.

KINSALE; an ancient sea-port of Ireland, fourteen miles S. from Cork, and 140 S.W. from Dublin. It is situated near the mouth of the river Bandon, on the acclivity of an eminence called Compass Hill. The streets run round the hill, one above another, and are connected by steep and narrow lanes, unsafe for carriages. Here, however, are many good private residences, an extensive barrack, a market-house, prison, an ancient church, Roman Catholic chapels, &c. This was a place of great importance at an early period; and it is to the excellence of its harbour that its origin and greatness are attributable. It appears to have been enclosed with walls, and regularly fortified. Edward III. granted a charter of incorporation to this place, and Edward IV. renewed and confirmed the grant. Owing to a successful landing effected here by the Spaniards, in 1600, the charter was forfeited, and the Spaniards were expelled by lord deputy Mountjoy, who compelled the commander, Don John de Aquilla, and 5000 Spaniards, to a surrender. The charter, however, was restored in the succeeding reign; and in the year 1649 the town was invested by Cromwell, who received the keys from the mayor, and delivered them to colonel Stubleen, the governor. In the reign of Charles II. a regular fort was begun here by lord Orrery, to which, upon its completion, the duke of Ormond gave the name of Charles Fort. It is a strong fortress, commanding the harbour in so entire a manner, that all vessels must pass within pistol shot of it. James II. granted a new charter to the inhabitants, and in the year 1689 landed at this port from France. In 1690 the earl of Marlborough took the old fort, and compelled the town to surrender.

The harbour of Kinsale is of a circular form, perfectly land-locked by high grounds, which enclose it on every side, and is watered by a long deep narrow channel, guarded by a fort, at which there is a lighthouse exhibiting a small bright light, while the sea entrance is shown at night by a fixed bright light upon the old head of Kinsale. Here was formerly a royal dock-yard and store-house, but the naval dépôt has been transferred to Cork, so that Kinsale derives little advantages of trade from its safe, sheltered, and secure harbour. Coal is imported, and the coasting-trade gives employment to many, but the great marine establishment of Kinsale is its fishery. Upwards of [illegible] vessels of about twenty tons burden, and known by the name of bookers, are constantly employed in the business, and afford an ample supply of fish to the markets of Kinsale, Cork, and Bandon. They are admirable sea-boats, put to sea in all weathers, and are eminently serviceable in the way of pilotage. Kinsale fishermen and pilots are exempt from impress. As a further compensation for the loss of trade, Kinsale has become a fashionable bathing place. Population in 1831, 78[illegible].

KIRKALDY; a town in Fifeshire, Scotland, situated near the northern shore of the Frith of Forth, about twelve miles from Edinburgh. It is said to have been anciently the seat of a society of Culdees, whence it was called Kill-Caledon, a name changed during the Scoto-Saxon period to Kirk-Caledie. Although, however, allowed to be of high antiquity, no record of it exists of earlier date than 1334, when it belonged to the abbots of Dunfermline, as a burgh of regality, and so continued till it passed in 1450, to the bailies and their successors for ever. Shortly after this it was erected into a royal burgh by charter, which Charles I. confirmed in 1644, and made it a free port, with further privileges, and a jurisdiction, extending to the northern coast of the Forth, from Aberdour to Largo, inclusive. At that period it is stated to have been more populous than now, and to have had at least 100 ships.

Kirkaldy in the present day consists chiefly of a very long street, well paved and lighted, in which are many elegant shops and houses; also several cross streets, and a variety of detached villas, the residences of the wealthier inhabitants.

The trade of the place bears no inconsiderable resemblance to that of Dundee, consisting almost exclusively in the spinning of flax, and the weaving of coarse linen goods for home and foreign consumption. The town possesses ten distinct establishments for the spinning and preparation of flax, in all of which steam-power is employed. There is one large establishment for weaving, in which steam is also the agent of movement. The [illegible] prepared here is woven by the hand, and engages a great number of individuals. The fabrics prepared and woven, are chiefly ticks, dowlas, checks, and sail-cloth. There are four bleachfields connected with the town for the whitening of the yarns. Kirkaldy has likewise a rope-work. In the town and environs, there are two breweries and a distillery, likewise two iron foundries, where the machinery employed in the spinning-mills is manufactured. Salt was once made to a considerable extent, but it is now manufactured on a very small scale. Besides these chief public works, there are many minor establishments incidental to a populous sea-port town. The harbour of Kirkaldy is situated at the east end of the town, and though of large dimensions, with a good stone pier at the east and west sides, it has the misfortune of being dry at low water; and at such times of the tide the passengers of steam-vessels have to embark by means of small boats. The shipping belonging to the town in 1836, consisted of seven vessels connected with the whale fishery, eighteen in the foreign and general trade of the country, two smacks engaged in the London trade, two vessels in the trade to Newcastle, two in the Glasgow trade by the canal, two in the trade to Leith, and one in the Dundee trade: burden in whole 6709 tons. The custom-house of Kirkaldy includes all the ports from Aberdour to St Andrews. The town possesses several branch banks, a chamber of commerce, a subscription library, a mechanic's library, and two newsrooms. The celebrated Dr Adam Smith was a native of Kirkaldy. The house in which he was born was taken down and rebuilt in 1835. Population of burgh and parish in 1831, 5034. To the west of the royalty, but within its boundary, as fixed by the act 2 and 3 William IV., are the populous village of *Linktown*, in the parish of Abbotshill, and the village of *Westbridge* in the parish of Kinghorn.

KIRKCUDBRIGHT; a county of Scotland, or, as it is more commonly called, a *stewartry*, from its having at one time been crown property, and under the authority of a royal *stewart*, is bounded on the south by the Solway Frith, on the north by Ayrshire, on the east by Dumfries-shire, and on the west by Wigtonshire. It extends from south-east to north-west forty-four miles, and its breadth ranges from twenty-one to thirty-one miles. It embraces a superficies of 855 square miles, or 547,200 statute acres. It is one of the two counties comprehended under the general name of *Galloway*, Wigtonshire being the other. The general appearance of Kirkcudbright is mountainous, and the high lands are mostly covered with heath, producing little else than pasturage for cattle and sheep, which are here bred for distant markets, the English in particular, and exported in great numbers, together with horses of the noted Galloway breed. A regular and cheap communication with Whitehaven and Liverpool, by means of steam navigation, affords to agriculturists a convenient outlet for the disposal of their produce. The soil in the lower grounds is, in many instances, possessed of great natural fertility, and affords plentiful crops. The climate is moist but warm, and in genial seasons figs ripen on the open garden-walls. The rocks of the county are argillaceous, granite, or whinstone with some freestone. Some mineral veins of lead, copper, and iron have been found. Coal is extremely scarce, which, along with lime, brought from Cumberland. The district possesses a variety of lakes, but few of them are considerable. The principal rivers are the Nith, which separates the county from Dumfries-shire, the Dee, the Ken, the Cree, and the Urr; and the smaller streams are the Fleet, the Tarf, the Deugh, and the Cluden. The Solway Frith, in a circular form, washes the coast of the stewartry from the Nith to the Cree, a space of forty-five miles, and along the shore, the coast is bold and rocky, the cliffs sometimes rising to a great height. A range of mountains stretches along the whole northern boundary, and there are also considerable mountains on the southern extremity, such as, Cairnsmore, 2597 feet in height, Criffel, 1831 feet, and Cairnharrow, 1110 feet. The land is almost universally enclosed, chiefly with stone walls, called Galloway Dykes. The enclosing of the land with fences was begun in the year 1724, and the measure was at first looked on with hostility by the country people, who rose to the number of 500, and, under the name of Levellers, proceeded to demolish the fences which had been erected. The insurrection, which originated from some peculiar notions as to the general rights of property, was suppressed by six troops of dragoons. After this, the country advanced in improvement, and when shell marl was first applied as manure in 1740, a great stride was made towards a better condition. The land was now cultivated on a great scale, and after the year 1760, considerable exportations began to be made. The important changes which ensued have, with justice, been traced in a great degree to William Craik of Arbigland, who introduced new rotations of cropping, new methods of cultivation, new machinery, and new modes of treating cattle. Since 1790 the district has coped with Dumfries-shire and other counties adjacent, in its agricultural improvements, and in the beginning of the present century, colonel M'Dowal of Logan, accomplished much in reclaiming moss-lands. Much has been effected by judicious planting by several noblemen and gentlemen of the stewartry. In 1814 it possessed 6000 horses, 50,000 cattle, and 178,000 sheep, besides swine to a prodigious extent; these animals being now a staple commodity in the usual produce, both for home consumpt and exportation. The real rental of the stewartry in 1811 was £83,487 for lands, and £3549 for houses. The manufacture of linen, woollen, and cotton goods engages a number of hands in the towns and the villages. A granite quarry, which employs 300 workmen, was opened in this county in 1830 by the Liverpool dock company. The stewartry contains two royal burghs—Kirkcudbright and New Galloway; and several considerable villages, as Maxwelltown, Castle Douglas, Gatehouse-of-Fleet, Creetown, &c. most of which have been built within the last eighty years. It includes twenty-eight parishes. Population in 1821, males 18,506, females 20,397; total 38,903; in 1831, males 18,969; females 21,621; total 40,590.

KIRKCUDBRIGHT; the capital town of the above county, is beautifully situated on the left bank of the Dee, about six miles from its entrance into the Solway; distant from Edinburgh one hundred miles; from Dumfries, twenty-eight. It is supposed to owe its origin and name to St Cuthbert, whose church was erected here as early as the eighth century. The church, some time between 1161 and 1174, was granted by Uchtred the son of Fergus, the lord of Galloway, to the monks of Holyrood, who retained it till the Reformation, and by the general annexation act it was afterwards vested in the crown. There was also in Kirkcudbright a church dedicated to St Andrew, which, after the Reformation, was conferred on the burgh; and it appears that there was likewise a Franciscan monastery, of which the records are altogether silent. The establishment of St Cuthbert's church was preceded or followed by the erection of a small fort by the lords of Galloway, which became in later times a castle in the proprietary of the crown, and caused the place to be put under the government of a constable. During the domination of the Douglasses in Galloway, Kirkcudbright became a burgh of regality under their influence; and on their forfeiture, James II. erected the town into a royal burgh, by a charter dated at Perth, the 26th of October, 1455. Hector Boece, referring to it soon after this period, calls it "ane rich town full of merchandise," a character it most likely deserved till injured by the troubles in the country. The appearance of the town at the present day is extremely pleasing, being regularly built, neat, and clean, and at a distance it seems embosomed in the foliage of a fine sylvan country. No town in Scotland possesses such a proportion of new houses; the cause of which is to be found in an arrangement among the inhabitants, by which a certain number of houses are built by subscription every year, and acquired by lot. In addition to the modern appearance which the town has acquired in this way, it is ornamented by the residences of many persons of good fortune, which, instead of being scattered in the suburbs of the town, as elsewhere, are placed in the streets, and that in considerable numbers. The town now possesses little or no trade, and has no manufactures, except hosiery on a small scale and the weaving of cotton. The harbour is the best in the county; at ordinary spring tides the depth of the water is thirty feet, and at the lowest neap tides, eighteen. Population of burgh and parish in 1831, 3511.

The distinguishing ornament of Kirkcudbright is *St Mary's Isle*, the seat of the earl of Selkirk, which lies about a mile south from the town farther down the Dee. Originally an island between the waters of this river and the swelling tide, it is now a peninsula projecting into the bay, luxuriantly wooded with oak, chestnut, walnut, and all the finer species of forest trees; and is, beyond all question, one of the loveliest spots in Scotland. The house was originally a priory, which was founded either in the reign of David I. or his successor Malcolm IV., in the twelfth century, by Fergus, lord of Galloway, and called "Prioratus Sanctæ Mariæ de Trayll." The monks were canons regular of the order of St Augustine. St Mary's Isle was visited in 1778 by the celebrated Paul Jones, when in command of an American ship, with the view of carrying off the earl of Selkirk as a hostage. The earl was absent, but the crew took away the silver plate, which, however, was afterwards returned by Paul Jones himself, who purchased it from his men at his own expense for that purpose.

KIRKDALE; a parish and village in the north riding of the county of York, about twenty-five miles N.N.E. of the city of York. Population in 1831, 1107.

In the summer of 1821, a cavern was accidentally discovered in this parish by some quarriers, which has greatly attracted the attention of geologists and men of science from the number and character of fossil bones found therein. The cave is situated in the side of a ravine, and its entrance is an aperture less than five feet square, which a person enters upon his hands and knees. The greatest length to which the cave penetrates, is from one hundred and fifty to two hundred feet, and the interior is of very irregular breadth and height, varying from two to seven feet, but seldom exceeding the latter dimensions either way. The roof is studded with pendant stalactite, or that deposit which is made by water filtrating through limestone, and which, when laid on the floor of a cave, is called stalagmite. A coating of this stalagmite covers the bottom of the Kirkdale cave; beneath this is a layer of soft mud, about a foot in depth; and below this again, is a second crust of stalagmite, spread over the proper floor of the cavity. Deprived of these coatings, the cave, it is obvious, would be considerably more roomy. In the lower part of the mud coating, and in the inferior layer of stalagmite, were the animal remains of the cave chiefly found. These consisted of the bones of no less than twenty-three species of animals; namely, hyæna, tiger, bear, wolf, fox, weasel, elephant, rhinoceros, hippopotamus, horse, ox, three species of deer, hare, rabbit, water-rat, mouse, pigeon, raven, lark, a species of duck and partridge. The bones, in all these cases, were broken into angular fragments or chips, and were all more or less decayed, though the gelatinous matter yet remained in some of them.

On these bones being discovered, the question naturally suggested itself, How came they to be accumulated into a cave, evidently of no great age, geologically speaking—into one spot—in this manner? One mode of answering this query is, to suppose that the animals may have retired there spontaneously to die. Another solution of the point is, that their carcases may either have been drifted into it entire by the waters of a flood, or the bones alone washed in, after their separation from the flesh. Against both these explanations insuperable objections may be brought. The cave could not have admitted the entire bodies of the elephant or rhinoceros, living or dead; had the bones been drifted in singly, they would have been smoothed more or less by rolling, and would have been mixed with gravel and rolled pebbles. Neither of these explanations, besides, accounts for the broken and splintered state of the bones, or for the great numbers of teeth in comparison with other bones. Many other objections might be adduced, but these are sufficient to show the inefficacy of the theories mentioned to explain the accumulation of these bones in the Kirkdale cave.

The explanation which professor Buckland adopted, has every appearance of being correct. He regards the cave as having been, during a long succession of years, *inhabited as a den by hyænas*, who had dragged into its recesses the other animal bodies, whose remains are found mixed with their own. The number of facts brought forward in support of this explanation by professor Buckland, is very great. In the first place, the habits of living hyænas have been referred to, and it has been found that these animals are in the habit of dragging carcases towards their dens—even those of camels and other large creatures—and this from very considerable distances. It has been doubted, indeed, whether hyænas actually amass the bones of their prey in their dens, but recent observations go to substantiate the truth of this. Again, we mode in which hyænas deal with bones given to them as food, has been examined, and the result is *entirely* confirmatory of Buckland's supposition. We give the account of this examination in his own words: "I have had an opportunity of seeing a Cape hyæna at Oxford, and of observing the animal's mode of proceeding in the destruction of bones; the shin-bone of an ox being presented to *him*, he began to bite off, with his molar teeth, large fragments from its upper extremity, and swallowed them whole, as fast as they were broken off." A part only of the bone, of harder texture, was left by the hyæna, and "the state and form of this residuary fragment are precisely like those of *similar* bones at Kirkdale." On some of the Kirkdale bones are marks of teeth, which marks fit exactly the teeth of the hyæna's jaws found in a *cavern*; a very strong corroboration certainly of Buckland's opinion. Now, the marks of teeth, on the bones munched by the living hyæna, "entirely resemble the impressions we find on the bones at Kirkdale; the small splinters, also, of the freshly gnawed bone, in form, and size, and manner of fracture, are not distinguished from the fossil ones." But the strongest fact yet remains. In the mud and stalagmite of the Kirkdale cave, were found considerable quantities of what appeared to be the refuse of animals that live much on bones, and which is known by the name of *Album Græcum.* On the day following that on which professor Buckland fed the living hyæna with bones, "the keeper (says he) presented me with a large quantity of Album Græcum, disposed in balls, that agree entirely in size, shape, and substance, with those found in the den at Kirkdale." We will add to these only one other confirmatory circumstance. On some parts of many of the fossil bones, there appeared a smoothness and polish, which could not result from the action of moving water, as other portions of the same bones were splintery and angular. Water would have rounded the whole equally. Professor Buckland therefore concludes, with probability, that the partial smoothness in question must have been produced by the repeated touch of the living hyænas' feet and skin, in their movements to and fro in the cave.

The extreme voracity of the hyæna accounts sufficiently for the number and variety of the animals found in its den. It is quite consistent with our knowledge of the creature's habits that it should have preyed on rats and mice, in the occasional absence of larger victims. Hyæna bones are found in the cave in the same fractured state as those of other animals; but this is a circumstance of no moment, as at this day hyænas prey on the young and helpless of their own kind, when pressed by hunger. It might be expected, to complete the chain of proof, that hyæna skeletons should have been found in some instances entire. Though this was not the case as far as the Kirkdale cave was concerned, the greater part of the bones of a complete hyæna were actually discovered in another bone-filled cave of the same kind.

All the change that has taken place on the cave since the hyænas inhabited it, is the formation of a layer of mud of about a foot deep. This professor Buckland is now inclined to ascribe to the last of the many geological revolutions that have been produced by violent irruptions of water, and to which last irruption the present diluvial matter of the earth's surface owes the disposition it bears.

The wide extent of the geological revolution in question, as well as all the other conclusions drawn from the phenomena of the Kirkdale cave, have received the amplest confirmation from the discovery of various caves of the same kind in Britain, and also in Germany, where bears for the most part seem to have been the tenants of the excavations. The great cavern of Gailenreath, in Franconia, which seems to have been the residence of white bears of an extinct species, contained cart-loads of bones of nearly the same animals as those on which the hyæna preyed. In every respect the position of the fossils corresponded with those of Kirkdale.

It thus is rendered almost certain, that there was a time when climes now cold must have once enjoyed a higher temperature, since our wilds and forests teemed once with animals now only found in hotter and southern latitudes,—that many generations of these lived and died, and were the prey or the tyrants of others;—that the hyæna, according to the instincts which still actuate it, dragged the bodies of those it killed or found slain, into its den, and there devoured them at its leisure; and that, finally, some great catastrophe brought destruction to the whole race, involving the remains of the dead in one mass; since which the temperature of this country has changed, and the wild animals of southern latitudes are now here extinct.

KIRKSTALL ABBEY. Kirkstall is a village situated on the river Aire, three miles from Leeds, in the West Riding of Yorkshire: the ruins of the abbey occupy a considerable space, measuring from north to south three hundred and forty feet, and from east to west four hundred and forty-five feet. It is probable that the vicinity was of considerable importance even in remote antiquity, being the site of a considerable Roman station, as Roman coins have frequently been dug up at Cockbridge, a village two miles north of Kirkstall abbey; and on an adjacent moor, traces of a Roman town have been discovered, consisting of fragments of urns and other pottery, with the ruins of a large stone aqueduct; and also the remains of a camp may be observed, admeasuring about five chains by four, with a single vallum. The choir of Kirkstall abbey extends fifteen yards by eight and a half, and has three chapels on each side: the transept is a square of nine yards and a half each way. The nave is forty-eight yards long, by eight and a half wide. Kirkstall abbey was founded in 1152 for Cistercians; they were first settled at Bernoldswick, near Gisburne, in Craven. The revenues of the house at the dissolution of the monasteries were estimated at three hundred and twenty-nine pounds per annum—a very large sum in those days: the site of the abbey was at that period granted to archbishop Cranmer and his heir. Among the monastic remains of the north of England, this ruin may justly claim an elevated rank: for, as a picturesque feature in landscape scenery, it is inferior only to Bolton abbey, and as a specimen of architecture, it need hardly yield the palm of superiority to any other northern ancient edifice, the celebrated Fountain's abbey only excepted. Nearly the whole building yet remains, as only the lead and timber were removed at the dissolution. The whole exhibits that struggle between the Norman and early Gothic styles, which marks the buildings of the reign of Stephen.

KLIPSPRINGER. This animal is one of the many species of the antelope; it inhabits the southern regions of Africa, among the most inaccessible and barren mountains of the Cape; the native Hottentots call this animal the Kainsi. Its length, from the tip of the muzzle to the end of the tail, is three feet two inches; its height at the shoulders is twenty-one inches, but at the croup, about twenty-two; the horns of this animal are three inches and a half long; the ears four and a quarter, and the tail three. The head of the klipspringer is small and short, terminating in a small round black muzzle, void of hair; the sides of the head are somewhat compressed, and contracted rather suddenly in front of the orbits; the ears are large, open, and at the points a little rounded; and the eyes are particularly dark, and rather large. The horns of the male are quite straight, and have three or four small annuli, or rings, round their roots; elsewhere they are perfectly smooth. The knees are, in appearance, a hard patch, which is caused by their frequent rubbing against the rocks; while the tail is but a short brush of hair. The colour of the animal is generally of a mixture of yellow and green, but the under parts of the body are a light sandy red, tinged with yellow; and the inside of the ears is clothed with long white hair, surrounded at the edges with a narrow black border. In this species of antelope, the legs are much stronger than in most others, and the hoofs much rounder, not pointed and flat, as in many others; and the tips of them are worn much more than any other part, from the animal treading on them alone; which together with the straightness of the pastern joint, in a great measure accounts for the astonishing agility with which the klipspringer bounds from the high and dangerous rocks and precipices which abound in that country. From the great value set upon its hair for stuffing mattresses, saddles, &c., and for its flesh, which is excellent venison, immense numbers fall a prey to the avarice of the natives; and in addition to these, a great many of the young ones are destroyed by eagles, and other birds of prey inhabiting that climate; so that the animal is become less common than formerly, and grows every day much scarcer.

KNARESBOROUGH; an ancient town in Yorkshire, eighteen miles west of York, situated on a cliff above the river Nidd, a stream of minor importance generally, but which, in its short course from the high moorlands till it joins the Ouse, flows through some delightful scenery. On one side of the river (the side on which the town lies) are the ruins of Knaresborough Castle; opposite is the famous Dropping-Well, and in the cliffs, or steep banks, are caves or excavations made in ancient or modern times, but alike in the circumstance of having been formed by persevering but misapplied industry. One excavation bears the name of St. Robert's Cave (St. Robert was a famous ascetic of the thirteenth century, whose chapel and hermitage are also shown here), but which is rendered more remarkable as having been the scene of the murder committed by the schoolmaster, Eugene Aram. Other excavations were formed by an industrious weaver and his son, who also cut the cliff into terraces, rising one above another, and planted them with flowering shrubs and evergreens. The cliffs on both sides of the Nidd, near Knaresborough, are said by professor Sedgwick to exhibit some fine modifications of the magnesian limestone.

The *Castle of Knaresborough*, occupied a most elevated situation, and, on the accessible side, was defended by a vast fosse, with strong works on the outside; the scattered ruins which still remain show it to have been a fortress of great extent. This castle was founded by Serlo de Burgh, who came into England with the Conqueror, and he was succeeded in his possession by Eustace Fitz-John, the great favourite of Henry I. It afterwards came into possession of the crown, for it seems that king John granted it to William de Estuteville for the services of three knight's fees. In the succeeding reign, it was bestowed on the great justiciary, Hubert de Burgh, on payment of £[illegible] per annum into the exchequer. In the reign of Edward II., it was in the family of the Vaux, or de Vallibus, but bestowed by that prince on his favourite, Piers Gaveston, whom he created earl of Cornwall. On his death it reverted to the crown, and continued attached thereto till 1371, when the castle, manor, and honour of Knaresborough, were granted by Edward III. to his fourth son, John of Gaunt, duke of Lancaster. In 1170, the four knights who murdered Thomas à Becket, took refuge here, where they remained prisoners many months, but were some time after pardoned, on condition of their performing a pilgrimage to Jerusalem. After the base treachery which Richard II. experienced from the earl of Northumberland, and his gallant son Hotspur Percy, that unfortunate prince was kept a close prisoner here, in an apartment still called the King's Chamber, till he was removed to Pontefract castle, and there murdered by order of Henry IV. In 1616, James I. granted this castle to his son Charles. It was a strong fortress during the civil wars, and made great resistance against the parliamentary forces. After the battle of Marston Moor, the townsmen most gallantly defended it against lord Fairfax, and, though at last compelled to surrender, it was on the most honourable terms that the garrison laid down their arms. Not long after this, it was, with many other castles, by order of the House of Commons, rendered untenable. The site of the castle commands a most beautiful view of the river, church, part of the town, Coghill Hall, dropping-well, bridge, [illegible] &c. The keep was large, and consisted of three stories. From an east view of it, the dismantled towers, and dilapidated arches, are finely picturesque; but the whole is fast falling into decay. Near the centre, in a part of the ruins, are the court-house and prison for the liberty of the forest of Knaresborough.

The *Dropping-Well* rises at the foot of a limestone rock. After running about twenty yards towards the river, it spreads itself over the top of a crag, about thirty feet high, from whence it falls in a shower, dropping perpendicularly very fast, and making a pleasing sound, thus gratifying the ear as well as the eye. The water, the discharge of which is reckoned at about twenty gallons a minute, is very cold, and has a petrifying quality. It soon incrusts every thing on which it falls: visiters may be supplied with petrified wood, [illegible] birds' nests, and even wigs. The petrifying property of the water of the Dropping-Well is owing to a gritty or sparry matter, which encrusts the objects it is deposited on. Mr De la Beche says, “Springs are seldom or ever quite pure, owing to the solvent property of water, which, percolating through the earth, always becomes more or less charged with foreign matter. Dr Webster describes the hot springs of Furnas [in the volcanic district of St Michael, Azores] as respectively varying in temperature from 73° to 207° Fahrenheit, and depositing large quantities of clay and siliceous matter, which envelop the grass, leaves, and other vegetable substances that fall within their reach. These they render more or less fossil. The vegetables may be observed in all stages of petrifaction." Harrowgate is about three miles from Knaresborough. The latter place had some repute as a watering resort, until the mineral springs of Harrowgate completely threw it into the shade. The chief manufacture carried on in Knaresborough is that of coarse linen. Population of the town in 1831, 5296.

KNIGHTS, TEMPLARS, (*a.* to the article *Templars.*) In the year 1119, the twentieth of the Christian dominion in Syria, nine pious and valiant knights, the greater part of whom had been the companions of Godfrey of Bouillon, formed themselves into an association, the object of which was to protect and defend pilgrims on their visits *to the holy* places. These knights, of whom the two chief were Hugo de Payens and Godfrey de St Omer, vowed, in honour of the *sweet mother of God* (*la doce* mere de Dieu), to unite monkhood and knighthood; their pious design met with the warm approbation of the king and the patriarch, *and in the* hands of the latter they made the three ordinary vows of poverty, chastity, and obedience; and a fourth, of combatting without ceasing against *the* heathen, in defence of pilgrims and of the Holy Land; and bound themselves to live according to the rule of the canons of St Augustine, at *Jerusalem*. The king assigned them for their abode a part of his palace, which stood close by where had stood the temple of the Lord. He and his arons contributed to their support, and the abbot nd canons of the temple assigned them for the keeping of their arms and magazines the street between it and the royal palace, and hence they took he name of the soldiery of the Temple, or Temlars. When Fulk, count of Anjou, in the year ollowing the formation of the society, made a pilrimage to the Holy Land, the order was even then n such repute that he joined it as a married broher, and on his return home remitted them annully thirty pounds of silver, to aid them in their ious labours, and his example was followed by seeral other Christian princes.

During the first nine years after their institution, e Templars lived in poverty and humility, and new members joined their society. Their thing consisted of such garments as were beowed on them by the charity of the faithful, and rigorously were the gifts of pious princes applied them to their destination—the benefit of pilims and of the Holy Land in general—that in sequence of their poverty, Hugo de Payens and dfrey de St Omer had but one war-horse been them. When the order had arrived at alth and splendour, its seal, representing two ights mounted on one charger, commemorated original poverty of its pious founders—a cirmstance which has been even made a ground of usation against them!

During the reign of Baldwin II. the kingdom very hard pressed by the Turks of Damascus, sul, and the neighbouring states, and the king been a captive in their hands. On his libern he sought every means of strengthening his kingdom, and as the Templars had displayed such eminent valour and devotion wherever they had been engaged, he resolved to gain them all the influence and consideration in his power. Accordingly he despatched two of their members as his envoys to the Holy See, to lay before the pope the state of the Holy Land, and also furnished them with a strong letter of recommendation to the celebrated Bernard of Clairvaux, the nephew of one of the envoys. Bernard approved highly of the object and institution of the order. Hugo de Payens and five other brethren soon arrived in the west, and appeared before the fathers, who were assembled in council at Troyes, to whom Hugo detailed the maxims and the deeds of the Templars. The fathers expressed their approbation of all he said, the order was pronounced good and useful, and some additions, taken from that of the Benedictines, were made to their rule. By the direction of pope Honorius, the council appointed them a white mantle as their peculiar dress, to which pope Eugenius some years afterwards added a red cross on the breast—the symbol of martyrdom. Their banner was of the black and white stripe, called, in old French, *Bauseant* (which word became their war-cry;) and bore the pious inscription, *Non nobis, Domine, non nobis, sed nomini tuo da gloriam*. St Bernard, if he did not himself draw up this rule, had at least a considerable participation in it; throughout his life he cherished the Templars; he rarely wrote a letter to the Holy Land, in which he did not praise them, and recommend them to the favour and protection of the great.

Owing to the influence of Bernard, and the sincere piety and noble qualities of its founders, the order rapidly increased in wealth and consequence. Many knights assumed its habit, and with Hugo de Payens travelled through France and England, to excite the Christians to the sacred war. With Henry I. of England they met the highest consideration. Fulk, of Anjou, re-united himself to Hugo de Payens, and on the invitation of king Baldwin, prepared, though advanced in years, to set out for Palestine, to espouse the daughter of the king, and succeed him on his throne. Gifts in abundance flowed in on the order, large possessions were bestowed on it in all countries of the west, and Hugo de Payens, now its grand master, returned to the Holy Land in the year 1129, at the head of three hundred Knights Templars of the noblest families in Europe, and shared in the disastrous attempt on Damascus.

The Templars were, in fact, the most distinguished of the Christian warriors. By a rule of their order no brother could be redeemed for a higher ransom than a girdle or a knife, or some such trifle; captivity was therefore equivalent to death, and they always fought with Spartan desperation. The Bauseant was always in the thick of the battle; the revenue they enjoyed enabled them to draw to their standard valiant secular knights and stout and hardy footmen. The chivalry of St John vied with them, it is true, in prowess and valour, but they do not occupy the same space in the history of the Crusades. The Templars having been from the outset solely devoted to arms; the warm interest which St Bernard, whose influence was so great, took in their welfare; and the circumstance that the fourth king of Jerusalem was a member of their body—all combined to throw a splendour about them which the knights of St John could not claim, but which also gave occasion to their more speedy corruption, and augmented the number of their enemies. Most writers, however, of the twelfth century speak respectfully of the Knights of the Temple, and those unsparing satirists, the Troubadours, never mention them but with honour.

By the bull, *Omne datum optimum*, granted by pope Alexander III. in 1162, the order of the Templars acquired great importance, but with it the ill-will and envy of the bishops and the secular clergy. By this celebrated bull it was established, that the grand master could only be chosen by the order; that no Templar could be, on any account, obliged to take an oath; that no one who had been received into the order could enter any other without leave of the grand master and the chapter; that the order should be free from the obligation of paying tithes; that it might admit spiritual persons into it, who should not, however, meddle with the affairs or the chapter of the order unless when required. As the bishops, however, retained their rights over these latter, they could not be buried at the temple courts without the consent of the bishops, for the Templars had peculiar chapels and burial-places at their houses. With the consent of the bishop and chapter, the order might levy tithes, or employ other spiritual persons when none of their own were at hand. But one of the most important privileges, (which had however been already granted them, in 1147, by Eugenius III.,) was, that when they came to make their collections in any place which was under interdict, they might have the churches opened once in the year, and divine service performed there, to which the excommunicated were admitted.

From this time forth the order may be regarded as totally independent, acknowledging no authority but that—before which the haughtiest monarchs bowed—of the supreme pontiff, who protected and favoured them as his champions against all who might dispute his will. The order consisted of three distinct classes, not degrees—knights, chaplains, and serving-brethren, to which may be added those who were attached to the order under the name of *affiliated*, *donates* and *oblates*.

The strength and flower of the order were the knights; all its dignities and superior offices belonged to them. The candidate for admission among the knights of the temple was required to produce proof of his being the lawful issue of a knight, or of one qualified to receive that distinction; and he must himself have already received the honour-conferring blow from a secular knight, for the order was spiritual, and its members could not deign to accept honour from a layman. The only exception was in the case of a bishop, who might draw his sword among the brethren of the temple, without having been a secular knight. The aspirant must moreover be free from debt, and, on admission, pay a considerable sum into the hands of the society. The most unlimited obedience to the commands of his superiors in the house and in the field of battle; the total abnegation of all interests but those of the society, (for the Templar could hold no property, could receive no private letter); the most unflinching valour, (for so long as a Christian banner waved in the field the Templar, however severely wounded, must not abandon it,)—were the duties of the knight of the Temple. If he fled, disgrace and punishment awaited him; if he surrendered, he had to end his life amid the torments inflicted by the enraged Moslems, or to languish in perpetual captivity, for the order never redeemed its members. Hence then the Templar was valiant as the fabled heroes of romance; hence prodigies of prowess, such as almost surpass belief, so frequently illustrate the name of the soldiers of the temple. Every motive that could stimulate to deeds of renown combined to actuate the soldier-monk. A knight, he obeyed the call of honour and emulation; a monk, (but the Templar was not, as some erroneously fancy, a priest,) he was, according to the idea of the times, engaged in the service most acceptable to God.

The mode of reception into the order corresponded with the dignity and importance of the character of a Knight Templar. Though a novitiate was enjoined by the original canons, in practice it was dispensed with; the candidate was, after all due inquiry had been made, received in a chapter assembled in the chapel of the order. All strangers, even the relatives of the aspirant, were excluded. The preceptor (usually one of the priors) opened the business with an address to those present, calling on them to declare if they knew of any just cause and impediment to the aspirant, whom the majority had agreed to receive, becoming a member of their body. If all were silent, the candidate was led into an adjacent chamber, whither two or three of the knights came to him, and setting before him the rigour and strictness of the order, inquired if he still persisted in his desire to enter it. If he did persist, they inquired if he was married or betrothed; had made a vow in any other order; if he owed more than he could pay; if he was of sound body, without any secret infirmity, and free? If his answers proved satisfactory, they left him and returned to the chapter, and the preceptor again asked if any one had anything to say against his being received. If all were silent, he asked if they were willing to admit him. On their assenting, the candidate was led in by the knights who had questioned him, and who instructed him in the mode of asking admission. He advanced, kneeling, with folded hands, before the preceptor, and said, "Sir, I am come before God, and before you and the brethren; and I pray and beseech you, for the sake of God and our sweet lady, to receive me into your society and the good works of the order, as one who, all his life long, will be the servant and slave of the order." The preceptor then questioned him, if he had well considered all the toils and difficulties which awaited him in the order, adjured him on the Holy Evangelists to speak the truth, then put to him the questions already asked by the knights, further inquiring if he was a knight, the son of a knight and a gentlewoman, and if he was a priest. He then asked if he would promise to God and Mary, our dear lady, obedience, as long as he lived, to the master of the temple, and the prior who should be set over him; chastity of his body; compliance with the laudable manners and customs of the order then in force; and such as the master and knights might hereafter add; fight for and defend with all his might, the holy land of Jerusalem; never quit the order, but with consent of the master and the chapter; never see a Christian unjustly deprived of his inheritance, or be aiding in such deed. The preceptor then said—"In the name, then, of God and of Mary, our dear lady, and the name of St Peter of Rome, and of our the pope, and in the name of all the brethren the temple, we receive you to all the good works of the order, which have been performed from the beginning, and will be performed to the end, you, your father, your mother, and all those of your family whom you let participate therein. So you, in like manner, receive us to all the good works which you have performed and will perform. We assure you of bread and water, the poor clothing of the order, and labour and toil enow." The preceptor then took the white mantle, with its ruddy cross, placed it about his neck, and bound it fast. The chaplain repeated the one hundred and thirty-second psalm, *Ecce quam bonum*, and the prayer of the Holy Spirit, *Deus qui corda fidelium*, each brother said a *Pater*, the preceptor kissed the new brother, the chaplain did the same. The Templar then placed himself at the feet of the preceptor, and was by him exhorted to peace and charity with his brother Christians; to chastity, obedience, humility, and piety; and thus the ceremony concluded.

The Templars had at first no clergy in their body; in spiritual matters they were subject to the patriarch of Jerusalem, and attended service in the church of the holy sepulchre, or they had priests assigned them by the patriarch or other bishops, who lived in their houses, but were subject to the bishop of the diocese. But the bull, "*Omne datum bonum*," which gave them exemption, enabled them to have priests of their own, independent of the prelates. These they generally took out of the regular orders, chiefly the Minorites, and the mode of reception was the same as that of the knights, omitting such questions as did not apply to them. The dress of these was white, consisting of a close-fitting coat, like that of the Cistercians, with the red cross on the breast; but they could not wear the white mantle, unless they enjoyed the episcopal dignity. They were appointed by the statutes the best clothes of the order. Besides their spiritual duties, they acted as secretaries, being possessed of all the learning of the order, the knights of the temple, in that point, little transcending their secular brethren. The chaplains sat in the chapter and the refectory next to the master; at table, they were the first helped; in punishment, they were more gently dealt with than the knights.

It is plain that the order, at its origin, could ave had no serving brethren. But when it grew o consequence, and acquired lands and houses, the ecessity of such a class was found, and those who vere neither knights nor priests were admitted nto it. They were received nearly in the same manner as the knights, with the necessary modifiation of the questions put to them; they origially wore the white dress, till, on account of some regularity, they were assigned a black or brown ress, with the distinguishing red cross. Many of e serving brethren were of wealthy and respectble, though not noble families. They were dided into two classes, the brother armour-bearers d the brother artizans; the former attended the ights to battle, as squires, or as foot-soldiers and ggage-train; they were on a footing of great inmacy with the knights, ate in the same refectory ith them and the clergy, but had one dish less at eir table. The brother artizans lived and exered their trades in the service of the order, on various estates, and its various preceptories. most every trade found its representative among em; the armourer and the cook were the most tinguished. Such offices of the order as were beneath the dignity of the knights, were exercised by the serving brethren. Thus, the preceptor of the coast of Acre was always one of them, as his place was a sort of commissariat, directed to the shipping and unshipping of men and stores.

It has always been, and is, we believe, at the present day, a practice of the Romish church, for members of the laity to attach themselves to particular religious orders, binding themselves to some of the minor obligations, and enjoying the advantages of its sanctity and power. These persons were called *Affiliated*. The splendour which soon surrounded the Templars, and their privilege of exemption from the ill effects of interdicts, drew numbers to seek to affiliate themselves with them, and wealthy burghers often paid largely for these advantages; married persons were not obliged to put away their wives, but bound themselves to a cessation of all intercourse, and on their death their whole property, reserving a provision for the widow, came to the order. These brethren did not wear its habit, but were bound on all occasions to further its interests. The donates and oblates consisted of persons who gave themselves and their property to the order, of children who were dedicated to it and were to take the rule when of sufficient age, or lastly, persons who vowed to serve the order all their life long without reward. Even princes and nobles were numbered among its donates, who exchanged their temporal for its spiritual blessings. These different classes constituted the order, but numerous knights and esquires frequently received its pay, and fought under its banner.

So large and extensive a society required numerous officers to direct it, and regulate its affairs and operations. At its head stood the grand master, who, like the general of the Jesuits in modern times, was independent of all authority but that of the sovereign pontiff. The residence of the grand-master was the city of Jerusalem; when that city was lost, he fixed his seat at Antioch, next at Acre, then at the castle of the pilgrims between Caiphas and Cæsarea, and finally in Cyprus, for his duty required him to be always in the Holy Land. The grand master never resided in Europe. It was necessary that he should be a knight, and his election took place in the following manner:—On the death of a grand-master, a grand-prior was chosen to administer the affairs of the order during the interregnum, and he, in conjunction with the principal members, fixed the day for the election of the new grand-master. When the appointed day arrived, the chapter usually assembled at the chief seat of the order; three or more of the most esteemed knights were then proposed, the grand-prior collected the votes for each of these, and whoever had the most was nominated to be the electing prior; an assistant was then associated with him in the person of some knight of high estimation. These two remained all night alone in the chapel engaged in prayer. Early next morning the knights again assembled, the mass of the Holy Ghost was sung, and prayer made in the chapel, and then the grand-prior exhorted the two brethren to perform their office faithfully. These two then left the chapel, and chose two others, these four chose two more, and so on till the number of twelve (that of the apostles) was completed. The twelve then chose a chaplain to represent our Lord. These thirteen were required to be all honest and generally esteemed men, eight of them knights, four serving brethren, and one priest. Having been sworn by the grand-prior to act justly and honestly in their office, the thirteen retired, and after invocation of the Holy Spirit, commenced the election. The majority of voices decided; if they could not agree, the prior and one of the knights returned to the chapter to announce their disagreement, and prayer was made for the grace of the Holy Ghost. When the election was made, it was announced to the assembled brethren, and when all had promised obedience to the new grand-master, the electing prior asked the grand-prior and some of the most distinguished knights, if they would, if chosen, promise obedience during life to the chapter, and to maintain the manners and usages of the order. On receiving a satisfactory reply, the prior, if the person chosen was present, said to him "In the name of God the Father, the Son, and the Holy Ghost, we have chosen, and do choose thee, brother N., to be our master." Then, turning to the brethren, he said, "Beloved sirs and brethren, give thanks unto God, behold here our master." The chaplains then recited the *Te Deum*, the brethren stood up, and led the master before the altar in the chapel, where, with prayer and singing, the election was closed.

The power of the grand-master was considerable, though he was very much controlled by the chapter, without whose consent he could not dispose of any of the higher offices, or undertake any thing of importance. He could not, for instance, take money out of the treasury, without the consent of the prior of Jerusalem; he could neither make war or truce, or alter laws, but with the approbation of the chapter. But the grand-master had the right of bestowing the small commands, the governments of houses of the order, and of selecting the brethren who should form the chapter, which power was again controlled by there being always assigned him two brethren as assistants, who, with the Seneschal, were to form a part of every chapter. The order was aristocratic rather than monarchic; the grand-master was like a Doge of Venice, and his real power chiefly depended on his personal qualities; he had, however, many distinctions; the greater part of the executive power was in his hands—in war he was the commander-in-chief; he had, as vicar-general of the pope, episcopal jurisdiction over the clergy of the order; he ranked with princes, and his establishment corresponded thereto; he had for his service four horses, a chaplain, two secretaries, a squire of noble birth, a farrier, a Turcopole and cook, with footmen, and a Turcoman for a guide, who was usually fastened by a cord to prevent his escape. When the grand-master died, his funeral was celebrated with great solemnity by torch-light, all the knights attending.

The chief officers of the order at Jerusalem were 1. the Seneschal, that is, the deputy of the grand-master; he had, like the master, the seal of the order, and had the same retinue with him; 2. the Marshal, who was the general, carried the banner of the order, and regulated every thing relating to war; the horses and equipments of the order were under him; he had four horses, two esquires, a serving brother, and a Turcopole; 3. the Treasurer; 4. the Drapier, who provided and regulated the clothing of the brethren; he had four horses, two esquires, and a servant to pack and unpack his goods; 5. the Turcopoler, who commanded the light cavalry of squires and serving brethren, who were called Turcopoles, the name given by the Greeks to those who were born of a Turk and a Christian, and who were employed as light troops in the imperial service; 6. the Prior of Jerusalem, whose office was, with ten knights, to accompany and protect the pilgrims on their way to the Jordan, and to guard the cross whenever it was brought into the field. All secular knights, who were friends to the order, fought under his banner; he too had four horses, two esquires, a serving brother, a secretary, and a Turcopole.

Each province of the order had a grand-prior, who represented in it the grand-master; each house had its prior or preceptor at its head, who commanded its knights in war, and presided over its chapters in peace. Various offices were filled by serving brethren, such as those of sub-marshal, standard-bearer, farrier, and, as already noticed, prior of Acre. The standard-bearer commanded those esquires who were not brethren of the order; he rode before the standard, which was borne by an esquire, or was carried on a carriage; he was assigned two horses.

To complete this sketch of the order of the Templars, it is necessary to take a view of the extent of their possessions in the east and in the west. These they divided into provinces; those in the east were—

1. Jerusalem, in which were 1. the Temple at Jerusalem; 2. the Castle of the Pilgrims; 3. that of Saphet at the foot of Tabor; 4. their house at Acre; 5. the Castle of Gaza, and eight or nine other houses and castles.

2. Tripolis, in which they had houses at Tortosa, Laodicea, Tyre, Sidon, and Berytus.

3. Antioch, their establishments in which are not known.

4. Cyprus, which became their chief seat after the loss of Acre.

In the west they had 1. the province of Portugal, where their chief seat was Tomar; 2. Castile and Leon, in which they had twenty-four preceptories; 3. Arragon, where they had also considerable possessions; 4. France and Auvergne, including Flanders and the Netherlands; 5. Normandy; 6. Aquitaine or Poitou; 7. Provence. These last provinces (somewhat more than modern France) were the chief seats of the Templars, in which their lands and houses were exceedingly numerous and extensive; 8. England, (including Scotland and Ireland) where they had several houses, as in London, York, Warwick, Lincoln, Pembroke, &c. and the grand-prior sat in the parliament of the realm; 9. Upper Germany, containing Austria, Bavaria, Swabia, Franconia, Alsatia, Lorraine, and the Rhinelands; 10. Brandenburg, containing [illegible]land, Saxony, Westphalia, Thuringia, &c.; 11. Bohemia and Moravia; 12. Upper and Middle Italy; 13. Apulia and Sicily.

We thus see that, except Scandinavia (for they had some possessions in Hungary) there was not a country in Europe in which the lavish piety of princes and nobles had not bestowed on the Templars a considerable portion of the wealth of the state; for in every province the order had its churches and chapels—the number of which was in the year 1240 as great as 1050—villages, farm-houses, mills, cornlands, pastures, woods, rights of venison and fisheries. The revenues of the Templars in England in 1185, as given by Dugdale, will afford some idea of their wealth. The [illegible] annual income of the order has been estimated at not less than six millions sterling.

Probably from the reasons assigned above, the wealth, the consideration, and the influence of the Templars greatly exceeded those of the Hospitallers, and in these points the Teutonic knights and those of St Lazarus, the two other similar orders, could far less stand in competition with them. The valour of the Templars, too, though not perhaps at all superior to that of the knights of the other orders, was without reproach, and Bauseant was rarely seen to give back in the fray. "The Templars," says de Vitry, "were always the first in attack, the last in retreat." But envy or disappointed expectation would occasionally lay the blame of defeat on the treachery of the soldiers of the temple; even the defeat and capture of St Louis, in his preposterous invasion of Egypt, is by one writer charged on them; most assuredly without reason. The only act of the kind, with which they may be perhaps justly charged, is in the case of the emperor Frederic II.; for when this monarch in his expedition to the Holy Land was about to pay a secret visit to the Jordan, the Templars wrote to give the sultan information of it, that he might seize him, but that prince sent the letter to Frederic. Yet even in this instance the conduct of the Templars was not wholly without excuse; they were not solitary in their opposition to the emperor, who was then lying under the ban of the pope, whose firm supporters these knights had ever been; and the Hospitallers are even said to have been parties in writing to the sultan. Frederic, therefore, on his return, did all the injury in his power to the order, by seizing its property in Sicily and Naples; but the heaviest charge he was able to bring against them was, that of admitting infidel sultans and their heirs within their walls, and suffering them there to invoke their false prophet, a charge that implies nothing more than a participation in the spirit of mutual tolerance and courtesy which had grown up from acquaintance between the warlike followers of the hostile religions. But he history of the order, as far as we can recollect, ecords only one instance of a Templar abjuring is faith, and that was an English knight, Robert f St Albans, who deserted to Saladin, who gave im his sister in marriage on his becoming a Mosem; and in 1185, the ex-red-cross knight led a aracen army to the neighbourhood of Jerusalem, asting and destroying the country with fire and word.

Their enormous wealth, their overweening pride, e disdainful neglect of the rules of their order, eir close attachment to the popes and their inrests, the excessive exemptions and privileges ey enjoyed, their luxury, their sensuality—these re the true causes of the enmity borne to them the secular clergy and the laity. In 1252 the us pope-ridden Henry III. of England said, that e prelates and clergy in general, but especially e Templars and Hospitallers, had so many libers and privileges, that their excessive wealth de them mad with pride; he added, that what d been bestowed imprudently, ought to be prutly resumed, and declared his intention of reking the inconsiderate grants of himself and his ecessors. The grand-prior of the Templars lied, "What sayest thou, my lord the king? r be it that so discourteous and absurd a word uld be uttered by thy mouth. So long as thou rvest justice thou mayest be a king, and as soon as thou infringest it, thou will cease to be a king." A bold expression certainly, but the prior knew his man well, and he would hardly have spoken so to the son of Henry. The anecdote of Richard I. bestowing his daughter Pride in marriage on the Templars is well known; and numerous traits of their haughtiness, avarice, luxury, and other of the current vices, may be found in the writers of the thirteenth century; but till the final attack was made, no worse charge was brought against them, unless such is implied in a bull of pope Clement IV. in 1265, which is, however, easily capable of a milder interpretation. Mr Raynouard asserts, too, that the proverbial expression *bibere Templariter* is used by no writer of the thirteenth century. In this he is preceded by Baluze and Roquefort, who maintain, that, like *bibere Papaliter*, it only signified to live in abundance and comfort.

When Acre fell in 1292, the Templars, having lost all their possessions and a great number of their members in the Holy Land, retired with the other Christians to Cyprus. Having probably seen the folly of all hope of recovering the Holy Land, they grew indifferent about it; few members joined them from Europe, and it is not unlikely that they meditated a removal of the chief seat of the order to France; at least the circumstance of the last master carrying so much treasure with him when summoned to Europe by the pope, gives great probability to this conjecture. The Hospitallers, on the other hand, with more prudence, as events showed, resolved to continue the war against the infidels, and they attacked and conquered Rhodes; while the Teutonic knights transferred the sphere of their pious warfare to Prussia, against its heathen inhabitants. Thus, while the Templars were falling under the reproach of being false and worthless knights, their rivals rose in consideration, and there was an active and inveterate enemy ready to take advantage of their ill-repute.

Philip the Fair, a tyrannical and rapacious prince, was at that time on the throne of France. His darling object was to set the power of the monarchy above that of the church. In his celebrated controversy with pope Boniface, the Templars had been, as usual, on the side of the Holy See. Philip, whose animosity pursued Boniface even beyond the grave, wished to be revenged on all who had taken his side; moreover, the immense wealth of the Templars, which he reckoned on making his own if he could destroy them, strongly attracted the king, who had already tasted of the sweets of the spoliation of the Lombards and the Jews; and he probably, also, feared the obstacle to the perfect establishment of despotism which might be offered by a numerous, noble, and wealthy society, such as the Templars formed. Boniface's successor, Clement V. was the creature of Philip, to whom he owed his dignity, and at his accession had bound himself to the performance of six articles in favour of Philip, one of which was not expressed. It was probably inserted without any definite object, and intended to serve the interest of the French monarch on any occasion which might present itself.

It had been the project of pope Boniface to form the three military orders into one, and he had summoned them to Rome for that purpose, but his death prevented it. Clement wrote, June 6, 1306, to the grand-masters of the Templars and the Hospitallers, inviting them to come to consult with him about the best mode of supporting the kings of Armenia and Cyprus. He desired them to come as secretly as possible, and with a very small train, as they would find abundance of their knights this side the sea; and he directed them to provide for the defence of Limisso in Cyprus during their short absence. Fortunately perhaps for himself and his order, the master of the Hospitallers was then engaged in the conquest of Rhodes, but Jacques de Molay, the master of the Templars, immediately prepared to obey the mandate of the pope, and he left Cyprus with a train of sixty knights, and a treasure of 150,000 florins of gold, and a great quantity of silver money, the whole requiring twelve horses to carry it. He proceeded to Paris, where he was received with the greatest honour by the king, and he deposited his treasure in the temple of that city. It is, as we have said, not impossible that it was the intention of Molay to transfer the chief seat of the order thither, and that he had, therefore, brought with him its treasure and the greater part of the members of the chapter. At all events, he had no suspicion of the king or the pope; and perhaps at that time there was no just ground for suspecting either of them, though the letter of Clement to Philip in August, 1305, proves that the king had already accused the order to the pope of some "almost incredible and impossible matters," and that the heads of it had challenged inquiry. Shortly afterwards Molay proceeded to Poitiers, as the pope wished to consult with him respecting the recovery of the Holy Land and the union of the orders. On the former subject the opinion of the grand-master was, that nothing short of a union of all the powers of Christendom would suffice; the latter he objected to on various grounds, one of which was, that they would disagree, inasmuch as the Templars were liberal of their goods, the Hospitallers avaricious, and farther, that the Templars were more esteemed and supported by the laity; he also dwelt on the superior strictness and austerity of the mode of life of his own order. He acknowledged, however, that the new order would be more powerful against the heathen than the two separate ones, and that it could be managed at less expense. The grand-master was then dismissed by the pope, and he returned to Paris.

It is difficult to say how early the project of attacking the Templars entered into the minds of Philip and his obsequious lawyers, or whether he originally aimed at more than mulcting them under the pretext of reformation; and farther, whether the first informers against them were suborned or not. The remaining records leave a considerable degree of obscurity on the whole matter. All we can learn is, that a man named Squin de Flexian, who had been prior of the Templars, and had been put out of the order for heresy and various vices, was lying in prison at Paris or Toulouse, it is uncertain which. In the prison with him was a Florentine named Noffo Dei, "a man," says Villani, "full of all iniquity." These two began to plan how they might extricate themselves from the confinement to which they seemed perpetually doomed. The example of the process against the memory of pope Boniface showed them that no lie was too gross or absurd not to obtain ready credence, and they fixed on the Templars as the objects of their true or false charges. Squin told the governor of the prison that he had a communication to make to the king, which would be of more value to him than if he had gained a kingdom, but that he would only tell it to the king in person. He was brought to Philip, who promised him his life, and he made his confession, on which the king immediately arrested some of the Templars, who are said to have confirmed the truth of Squin's assertions. Shortly afterwards, it is said, similar discoveries were made to the pope by his chamberlain, cardinal Cantilupo, who had been in connection with the Templars from his [illegible] year.

Squin Flexian declared, 1. that every member on admission into the order swore on all occasions to defend its interests right or wrong; 2. that the heads of the order were in secret confederacy with the Saracens, had more of Mohammedan unbelief than of Christian faith, as was proved by the mode of reception into the order, when the novice was made to spit and trample on the crucifix, and blaspheme the faith of Christ; 3. that the superiors were sacrilegious, cruel, and heretical murderers; for if any novice, disgusted with its profligacy, wished to quit the order, they secretly murdered him, and buried him by night; so, also, when women were pregnant by them, they taught them how to produce abortion, or secretly put the infants to death; 4. the Templars were addicted to the error of the Fraticelli, and, like them, despised the authority of the pope and the church; 5. that the superiors were addicted to the practice of an unnatural crime, and if any one opposed it, they were condemned by the master to perpetual imprisonment; 6. that their houses were the abode of every vice and iniquity; 7. that they endeavoured to put the Holy Land in the hands of the Saracens, whom they favoured more than the Christians. Three other articles of less importance completed this first body of charges. It is remarkable, that we do not find among them those which make such a figure in the subsequent examinations, namely, the devil appearing among them in the shape of a cat; their idolatrous worship of an image with one or three heads, or a skull covered with human skin, with carbuncles for eyes, before which they burned the bodies of their dead brethren, and then mingled the ashes with their drink, thereby thinking to gain more courage; and lastly their smearing this idol with human fat.

The historians do not precisely state the date of Squin Flexian's confessions, or whether they were prior to the month of April, 1307, in which month Jacques de Molay, accompanied by the preceptors of Beyond-sea, Poitou, Aquitaine, and France, repaired to the pope at Poitiers, to justify the order from the imputations of corruption every day cast upon it, in which, as he thought, he succeeded, and again returned to Paris. Philip having now all things prepared, sent, like his descendant Charles IX. previous to the St Bartholomew massacre, secret orders to all his governors to arm themselves on the 12th of October, and on the following night, but not sooner on pain of death, to open the king's letter, and act according to it. On Friday the 13th of October, all the Templars throughout France were simultaneously arrested at break of day. In Paris, on the following day, the heads of the university assembled in the church of Notre Dame, where in their presence, and that of the royal officers, the chancellor Nogaret accused the knights of their heresies. On the 15th the university met at the temple, where the grand-master and some of the heads of the order were examined, and are said to have acknowledged the truth of the charges. The king, who was anxious to carry the people with him, had now the act of accusation drawn up, in which the knights are designated as ravenous wolves, perjurors, idolaters, and in general as the vilest of men. This act was read to the citizens, assembled in the royal gardens. He also sent to Edward II. of England, inviting him to follow his example, but Edward was reluctant to proceed to any extremities; he wrote on the 30th October, declaring that the charges appeared to him and his barons and prelates, to be incredible, but that he would write to the seneschal of Agers in Guienne, who was nearer to the country where the reports prevailed, to make inquiry. On the 10th December, after inquiry had been made by the seneschal, Edward wrote to the *pope*, stating, that a horrible rumour was abroad respecting the Templars, who should be severely punished if it was found to be true, but that he could give no credit to it, and prayed the pope to institute an inquiry. He had previously (December 4th) written to the kings of Portugal, Castile, Arragon, and Sicily, stating that a priest (Philip's envoy) had been lately urging him to suppress the order, accusing it of heresy, but that in consideration of the great merits of the order he had given no credit to these insinuations; and he besought these monarchs to pay no attention to the rumours *against* it. But Clement had put forth a bull (November 22) stating the charges against the Templars, and calling on the king of England to *imprison* them, and take their goods into safe keeping. To this Edward yielded obedience, and on the Wednesday of the Epiphany the English *knights* were arrested, but the king gave directions that they should be treated with all gentleness. Orders were sent to Ireland, Scotland, and Wales, to the same effect, and Edward wrote to the pope to assure him of obedience.

Meantime Philip and his chief agents were not remiss. These were, his confessor, William Imbert, a dominican, member, therefore, of an order hostile to the Templars, and well versed in inquisitorial arts; William Nogaret, the chancellor, the man who had dared to seize pope Boniface at Anagni; William Plesian, who had also borne a part in that bold deed, and afterwards swore in the presence of the peers and prelates of France, that Boniface was an atheist and sorcerer, and had a amiliar devil; and several others of the same tamp, all likely to prove gentle judges! The nhappy knights had been thrown into cold cheer-ess dungeons, (for they were arrested, we should emember, at the commencement of winter,) had arely the necessaries of life, were deprived of the abit of their order, and of the rites and comforts f the church; were exposed to every species of orture then in use; were shown a real or pre-ended letter of the grand-master, in which he nfessed several of the charges, and exhorted hem to do the same; and finally were promised fe and liberty, if they freely acknowledged the uilt of the order. Can we then be surprised that e spirit of many a knight was broken, that the ope of escape from misery, even at the cost of grace, was eagerly caught at, and that false-oods, the most improbable, were acknowledged be true? At a subsequent period one Templar us expressed himself before the papal commis-oners:—" I have seen the fifty-four knights con yed in carts to be committed to the flames, because they would not make the required confessions; I have heard that they were burned; and I doubt if I could, like them, have the noble constancy to brave the pile. I believe that if I were threatened with it, I should depose on oath before the commissioners and before all who would ask me, that the enormities imputed to the knights are true; that I should kill God himself if required; and he implored all present not to let the king's officers know what he had said, lest they should commit him to the flames." This shows the value to be set on confessions extracted by the rack, or the fear of it, for this last kind are those which were termed *voluntary*. The papal commission even declared, that terror had deprived several of the witnesses (the imprisoned Templars) of their senses.

It is remarkable that the most improbable charges are those which were most frequently acknowledged, so just is the observation, that men will more readily in such circumstances acknowledge what is false than what is true; for the false they know can be afterwards refuted by its own absurdity, whereas truth is permanent. There is no improbability whatsoever in supposing, that the Templars, in common with all the religious orders, were obnoxious to the charge of unnatural lust, though certainly not as a rule of their society; and it is by no means unlikely, that deism may have prevailed to some extent among their members, owing to their intercourse with the Moslems. Yet no Templar confessed himself guilty of either one or the other, though enough deposed to the worship of the head and the spitting on the cross. How, we may ask, could deism and the grossest idolatry combine? and does not the charge of their having learned the latter from the Saracens carry its own refutation with it? How many brave knights expired amidst tortures, sooner than confess these absurd falsehoods, as we must term them? how many recanted their first declarations, and sealed with their blood their avowal of the innocence of the order? Is there not eternal and irreconcilable contradiction between the depositions of the different parties, or of the same parties at different times? Does not terror of the rack visibly pervade every one of the confessions? How different, too, is the conduct of the accused before the papal commission, where there was some chance of justice and mercy, and before the royal bloodhounds, where there was none!

But truth is one, and the order was one—inquiry must then have brought similar enormities to light in other countries, if they existed. From the additions which the archives of the Vatican have enabled Münter to make to the pieces in Wilkins's Consilia, our account of the process against the Templars in England is tolerably complete. Of the Templars themselves 228 were examined; the Dominican, Carmelite, Minorite, and Augustinian friars brought abundance of hearsay evidence against them, but nothing of any importance was proved; in Castile and Leon it was the same; in Arragon the knights bravely endured the torture, and maintained their innocence; in Germany all the lay witnesses testified in their favour; in Italy their enemies were more successful, as the influence of the pope was there considerable, yet in Lombardy the bishops acquitted the knights. Charles of Anjou, the cousin of Philip and the foe of the Templars, who had sided with Frederic against him, could not fail, it may be supposed, in getting some evidences of their guilt in Sicily, Naples, and Provence. It is not undeserving of attention, that one of these witnesses, who had been received into the order in Catalonia, (where all who were examined had declared the innocence of the order,) said he had been received there in the usual impious and indecent manner, and mentioned the appearance and the worship of the cat in the chapter! Such is the value of rack-extorted testimony! In fine, in every country out of the sphere of the immediate influence of Clement, Philip, and Charles, the general innocence of the order was acknowledged.

Confessions made on the rack, where even every sigh and groan was malignantly noted down, are generally allowed to be of little value; but some stress is laid on the circumstance of seventy-two Templars having confessed (June 29 and 30, 1308,) in presence of the pope without the appliance of any torture. But these, Mr Raynouard asserts, had been already subjected to that discipline, and had given way under it. All did not repeat their previous declarations; Jean de Valgellé protested afterwards before the papal commission at Paris, that he had confessed nothing to the pope, and several of them revoked their depositions, and died asserting the innocence of the order. The grand-master and the priors demanded to be brought before the pope, to defend themselves and the order; they were brought as far as Chinon, within a few miles of his abode, but on some frivolous pretexts were prevented from seeing him; and when what was called their declaration was afterwards read to them, the grand-master crossed himself several times with amazement at the falsehoods which had been inserted in it. Throughout the entire process from Oct. 1307, to May, 1312, the most determined design of the king and his ministers to destroy the order meets us at every step; Philip would have blood to justify robbery; several Templars had already expired on the rack, perished from the rigour of their imprisonment, or died by their own hands; but on the 12th May, 1310, fifty-four Templars who had confessed, but afterwards retracted, were by his order committed to the flames in Paris as relapsed heretics. They endured with heroic constancy the most cruel tortures, asserting with their latest breath the innocence of the order, though offered life if they would confess, and implored to do so by their friends and relatives. Similar executions took place in other towns. The pope soon went heart and hand with Philip. In vain did the bishops assembled at Vienne propose to hear those members who came forward as the defenders of the order. A bull of the pope dissolved the order, and transferred its possessions to the knights of St John, who, however, had to pay such enormous fines to the king and pope before they could enter on them, as almost ruined them; so that if Philip did not succeed to the utmost of his anticipations, he had little reason to complain of his share. The members of the society of the Templars were permitted to enter that of the Hospitallers, a strange indulgence for those who had spitten on the cross and practised unnatural vices! In Portugal the order was not even suppressed; it only changed its appellation, becoming that of Christ.

The grand-master and the four principal dignitaries of the order still languished in prison. They were brought before a commission, composed of the cardinal of Albano and two other cardinals, the archbishop of Sens, and some prelates; as, according to the proceedings, they had all confessed, they were (March 11, 1314,) brought out before the cathedral of Paris to hear their sentence read, which condemned them to perpetual imprisonment. Scarcely had the cardinal of Albano commenced reading, when he was interrupted by the grand-master and the commander of Normandy, who protested their innocence, and retracted all the confessions they were said to have made. The prelates, in surprise, directed the provost of Paris to keep them safe till the morrow, that they might deliberate respecting them, but Philip, who was at hand, declared them relapsed, and had them burned that very evening. While life and articulation remained they protested their innocence. We give implicit credit to the dying declaration of Cranmer—should we refuse it to that of Jacques de Molay?

In examining the origin and history of this order, the spirit of its institution, and the character of its members, an accusation of heresy is certainly the last which we should have suspected it to have incurred.—Founded solely for the purpose of protecting and extending the Christian faith, the names of infidel and enemy were equivalent in their mouths, and from their solemn vow of rendering justice to all, the Saracens alone were excepted. During their long and valiant struggle with the enemies of the cross, they seem never to have forgotten the objects of their institution, and though occasional jealousies broke out between them and the other Crusaders, their enemies had never the audacity to charge them with deserting the standard of their faith, even in the most perilous extremity of its hazard. Whatever schemes of ambition might have actuated the various sovereigns who, at different times, sought to redeem Palestine from the hands of the infidels, it could only have been a pure enthusiasm which led these misguided warriors to the burning plains of Syria. Nor did their faith waver on more trying occasions. When six hundred of the knights had been made prisoners by the Sultan of Egypt, who, meting out to the Christian soldiers the same mercy which the Saracens experienced at their hands, offered to them the alternatives of apostacy or death, the Templars at once preferred all the terrors of the sword to the shame of staining their names with the imputation of cowardice, or the sin of apostacy. It must have required a longer period, and very different occupations from those in which the Templars were engaged, so far to have corrupted the spirit and sentiments of the order as to reduce them to the degree of irreligion and depravity, into which the evidence of their accusers would make us believe they were plunged. So far as regards their moral character, it is probable that the accusations against them were better founded, though the stress which was laid on their lapse into infidelity and heresy, rather tends to show that the charges of immorality were by no means considered as the strong part of the case.

But the character and treatment of the witnesses, furnish by far the strongest grounds for concluding that the proceedings against this [illegible] and suffering body of men, were, in the highest degree, unjust and tyrannical. Life, liberty, and riches, were offered to such of the knights as would confess the guilt of their order. The fear of death had few terrors for men who had so [illegible] faced it, with weaker inducements to firmness, and, at last, their persecutors, speculating on the very virtue and fidelity of the accused, presented certain forged letters, which they affirmed had been received from the grand-master, inviting them to avow their guilt, in hopes that their oath of obedience might thus be turned to their destruction. Even this artifice was unsuccessful, and torture was resorted to, as the speediest method of arriving at the truth. It is revolting to dwell upon scenes like these, and were it not for the awful moral lesson which they inculcate, and the salutary jealousy of all tyrannical power which they necessarily inspire, we should wish that the page of history, which is blotted with such details, were erased from the volume for ever. The unfortunate Templars, seized and imprisoned, stripped of the habit of their order, and despoiled of the rich possessions which might have rivalled the treasures of kings, were delivered over to the tender mercies of their examiners. With scrupulous fidelity, the secretary noted down, not only their confessions, while enduring the process of the torture, but even their exclamations of anguish, their sighs, their groans, and their tears. And well might the endurance of the bravest knights sink under the accumulated inflictions of the processes to which they were subjected. All the various tortures of the inquisition seem to have been applied. Sometimes, the victim, being stripped naked, had his hands tied behind him, and a heavy weight attached to his feet, and was thus hoisted into the air by a rope tied to his hands, and passing through a pulley in the ceiling. This torture was occasionally varied by letting the rope slip, and then suddenly retaining it, so that the shock generally dislocated some of the limbs, and caused the most extreme anguish. Fire, too, was another expedient of these anxious friends of justice to elicit the truth. The naked feet of the sufferer were placed in an instrument from which he could not disengage them, and, being continually anointed with some unctuous matter, they were thus exposed to a powerful fire. Sometimes, on being questioned upon his guilt, a board was placed between him and the fire, and, if he persisted in his denials, he was again exposed to the blaze. Such, amongst others, were the ordinary tortures to which all accused of heresy were occasionally subjected; but, in the case of the Templars, a still more recondite system of torments was employed. One of the witnesses declared, that he had been so long and so frequently exposed to the torture of fire, that the flesh of his heels had been burnt off to the bone. Tortures even of a more shocking description were made use of, from which the heart turns with disgust and abhorrence. Many of the French knights perished under these inflictions, and some, yielding to the weakness of human nature, confessed every thing which their enemies required from them; but of these many afterwards retracted their confessions, thinking it better to suffer the punishments assigned to relapsed heretics, than to preserve their lives and liberty under the heavy load of treachery and conscious guilt. Such were the means used to procure testimony against the order from the knights themselves, and although some other witnesses were produced, yet the question of their guilt was evidently considered by their persecutors to rest almost entirely on these confessions. Nothing however proves more strongly the weakness and falsity of the charges than the framing of the questions which were put to the witnesses against the order, and which are ingeniously contrived to produce an imputation of guilt, although the testimony may be perfectly true, and the accused entirely innocent.

In addition to the fact, that all the testimony of the knights themselves was given during imprisonment, under threats, and frequently during the operation of tortures, a fact which alone is sufficient to deprive such testimony of the smallest title to credit—in addition to the circumstance of many of the knights retracting the avowals of guilt thus obtained, which ought to have thrown discredit on the confessions of the rest; the conclusive proof against these confessions is the internal evidence of falsity which they contain. It would be tedious to repeat the variety of contradictory fictions which they display, to follow them step by step through their mazes of iniquity and fraud. The disgusting recitals bear on their front the stamp of falsehood. Let one instance suffice. Geoffrey de Gonavella being examined before the English commissioners, said, he was admitted into the order at the Temple in London, by Robert de Torvile, grand-master of England; that he was directed to deny Christ, but that he scrupled to do so, upon which the grand-master desired him to obey, and assured him that it would not be hurtful to his soul, at the same time telling him that the custom had been introduced by a *wicked* master, who, being confined in a Saracenic dungeon, and having no other means of escape, swore that he would introduce that custom into the order, which had always thenceforward been observed. "Therefore," said the superior, "you may well do this thing." Is it credible that de Torvile would have made use of the term *wicked* at the very moment he was directing the novice to perform the act, for the introduction of which that term was applied? The strong contradictions in matter of fact which distinguish the examinations, and which are collected by M. Raynouard, are not more conclusive against their truth, than the manifest violations of reason and probability in which they abound.

The last proof of the innocence of the Templars is found in the bull, which pronounced the dissolution of the order. The pontiff there acknowledges that the evidence of their guilt was not conclusive. Now, if the testimony of the witnesses against the order, or even one tenth part of that testimony, was to be credited, no one could for a single moment doubt the truth of the accusations against them. So entirely indeed does Clement appear to have been convinced that the charges were not substantiated, that he feared to trust the case to the decision of a general council; but, assembling the cardinals and certain prelates in a secret consistory, he there, of his own authority, abolished the order. He was not however bold enough to pronounce a definitive decree, but, pursuing those half-measures of iniquity, which prove how easily the darkest depravity may be united with the most pusillanimous meanness, he pronounced the sentence by way of provision, rather than condemnation; a decision equally contrary to justice and to ecclesiastical rules.

KNITTING. It is probable that the art of knitting was discovered in the sixteenth century, but this is doubtful; and it is a disputed point to what people we are indebted for the invention, the name of the inventor being wholly unknown. Savary, in the "*Dictionaire de Commerce*," gives the merit to the Scottish nation, because the French stocking-knitters, when they became so numerous as to form a guild, made choice of St Fiacre for a patron, this saint having been the son of Eugenius, who is said to have been king of Scotland in the beginning of the seventh century; besides this, there is a tradition that the first knit stockings were carried to France from that country. The first letter of foundation for this guild, named the "*Communauté des maitres bonnetiers au tricot*," is dated August 1527. This account of the invention is however contradicted by our own annals. Howel, in his "History of the World," printed in 1680, relates that Henry VIII., who reigned from 1509 to 1547, wore *cloth hose*, till he received a pair of knit silk stockings from Spain. This author says, "Silk is now grown nigh as common as wool, and become the clothing of those in the kitchen as well as the court; we wear it not only on our backs, but of late years on our legs and feet, and tread on that which formerly was of the same value with gold itself. Yet that magnificent and expensive prince, Henry VIII., wore ordinarily cloth hose, except there came from Spain, by great chance, a pair of silk stockings. King Edward, his son, was presented with a pair of long Spanish silk stockings by Thomas Gresham, his merchant, and the present was taken much notice of. Queen Elizabeth, in the third year of her reign, was presented by Mrs Montague, her silk-woman, with a pair of black knit silk stockings, and thenceforth she never wore cloth any more." In the year 1530, John Palsgrave, French master to the princess Mary, published a grammar, in which the different meanings of the verb *to knit* are exemplified, and among them "I knit bonnets or hosen," is rendered "*Je lasse;*"—Example. "She that sytteth knyttinge from morrow to eve can scantly win her bread." "Celle qui ne fait que lasser depuis matin jusqu'au soyre, a grans peyne peut elle gagner son payn." We give this sentence, because it seems to prove that knitting was a business at this time, although one which was badly remunerated; and the master's care to instruct his pupil in this meaning of the word, shows that knitting was an amusement or employment with which even royalty was acquainted. In a household book kept during the life of Sir Thomas L'Estrange of Hunstanton in Norfolk, by his lady, Ann, daughter of lord Vaux, are entries, in the year 1533, for "knytt hose," at so low a price that we cannot suppose them to have been foreign articles, but made by those persons to whom Palsgrave's example refers. Neither can we imagine these hose were of silk, two pair of them, at the price of one shilling together, being for the children. And in the reign of Edward VI., among the regulations relating to trade and manufactures, issued in 1552, mention is made of "knitte hose, knitte petticotes, knitte gloves, knitte slieves, or any other thing used to be made of woolle." The art of knitting must have been practised to some extent to render this act necessary, and we cannot reconcile it with other anecdotes upon the subject: as for instance, we are told, that, in the year 1564, William Rider, an apprentice of Mr Thomas Burdett, having accidentally seen in the shop of an Italian merchant, a pair of knit worsted stockings, procured from Mantua, and having borrowed them, made a pair exactly like them, and these were the first stockings knit in England of woollen yarn. Either this anecdote or the act of Edward VI. must be incorrect, and we think the balance of credibility is in favour of the latter. About 157 knitting was so commonly practised in the villages of England, that in Hollinshed's Chronicle, the bark of the alder is mentioned as being much used by the country wives in colouring their "knit hosen" black. The greatest ornaments in dress about the same time, were knit silk stockings and Spanish leather shoes. About 1578, queen Elizabeth being at Norwich, there were exhibited before her upon a stage, eight female children spinning worsted yarn, and as many knitting worsted yarn hose. We ought to notice, that the court poet of Henry VII. mentions in derision the "blanket hose" of the female who is the subject of his verse; thereby intimating that even at that period better kinds of stockings were in use. To counterbalance this, we have the expression cloth *hose* as worn by queen Elizabeth, who inherited among others of her father's many foibles (to speak gently) his love of dress.

In Germany the first mention of stocking-knitters occurs in the middle of the sixteenth century and at Berlin about the year 1590. Silk stockings were first worn in France by Henry II., at the marriage of his sister with the duke of Savoy in 1559. In the reign of Henry III., who ascended the throne in 1575, the consort of Geoffry Camus de Butcarre, who held a high office in the state, would not wear silk stockings, given to her by a nurse who lived at court as a Christmas present, because she considered them to be too gay. This was forty-eight years after the establishment of the guild in that country.

The first stocking-loom used in England was invented by William Lee, and the date of the invention is fixed in Deering's history of Nottingham in the year 1589. This ingenious person was a native of Woodborough, a village about seven miles distant from Nottingham. He was heir to a considerable freehold estate, and a graduate of St John's college, Cambridge. Being attached to a young country girl, whose occupation was knitting, he bethought him of endeavouring to find out a machine which should facilitate her work, and lessen her labour. The result of his efforts was the stocking-loom; and having instructed his brother James in the use of it, and engaged apprentices and assistants, he carried on business for several years at Calverton, a village about five miles distant from Nottingham. Obtaining neither support nor remuneration from queen Elizabeth, to whom he showed his work, Lee accepted an invitation from Henry IV. of France, who, having heard of the invention, promised a handsome reward to the author of it. Lee, therefore, carried nine journeymen and several looms to Rouen, in Normandy, where he worked with great approbation, but the assassination of the king, and the internal commotions which succeeded, injured the undertaking, and he fell into great distress, and died soon after at Paris. Two of his people remained in France, the others soon returned to England, and joined a former apprentice of Lee's, named Aston, at Thoroton, by whom some improvements in the loom were made, and the foundation of the stocking manufactory laid in this country. The number of masters increased so much, that they applied to Cromwell to sanction the formation of a guild; this was however refused, and letters patent were not granted to them till 1663, when privileges were secured to them to the extent of ten miles round London.

In the year 1614, the Venetian ambassador, Antonio Correr, persuaded an apprentice named Henry Mead, by the promise of five hundred pounds sterling, to go with a loom to Venice for a stated time, and to teach there the use of it. Mead met with a favourable reception; but his loom becoming deranged, and no person at Venice being able to repair it, he returned to England when his time was expired, and the damaged loom was sold in London by the Venetians for a mere trifle. Another account says that Correr sent a boy back with Mead to England, who returned to Venice well instructed in the art, which was established at Udina, and a great many stockings manufactured and sent for sale chiefly to Gradisca, in Austria. But in consequence of the poverty of the Venetian stocking-knitters, an order was given to the person who had made the machines, Giambattista Carli of Gemona, that he should make no more looms; and the business at Udina being relinquished, the masters removed their machines to Gradisca, where the inhabitants of Udina were obliged to purchase such stockings as they wanted.

Some years after this, a person of the name of Abraham Jones, who understood stocking-weaving and the construction of the loom, went with some assistants to Amsterdam, where he worked on his own account for two years, till he and his people were carried off by a contagious disease, when the looms (no one understanding the use of them) were sent to London and sold at a low price. This was mentioned in the petition to Cromwell, and the establishment of a privileged company urged as the means of exclusively retaining the trade in this country.

Notwithstanding the clear and distinct account of the invention of the stocking frame by William Lee, the French have laid claim to that honour; as, however, they do not pretend to give the name of the inventor, or the circumstances attending his discovery, it is not worth while entering into their pretensions. The first loom was probably carried to France in the time of Colbert, by a person named Cavellier, a native of Nismes; and in the course of fifty years the number of looms in that town and neighbourhood increased to some thousands. Savary asserts that the stocking manufactory was established at the castle of Madrid, in the Bois de Boulogne, near Paris, in 1656, under the direction of John Hindret. Winkelmaun says that the French refugees who sought shelter in Germany after the revocation of the edict of Nantes, carried the first looms to Hesse. This is rendered probable by the circumstance that the Germans give French names to every part of their looms, as well as to their different kinds of work.[*]

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LAC; a resinous substance, found upon several trees and shrubs in the East Indies, and which is of considerable use in various arts and manufactures. It is produced by the lac insect (*chermes lacca*,) of which the following account is given by Dr Roxburgh in the Transactions of the Philosophical Society.—

"Some pieces of very fresh-looking lac, adhering to small branches of *Mimosa cinerea*, were brought to me from the mountains. I kept them carefully in wide-mouthed bottles slightly covered, and fourteen days from the time they came from the hills, thousands of exceedingly minute red animals were observed crawling about the lac and the branches it adhered to, and still more were issuing from small holes on the surface of the cells. By the assistance of glasses, small excrescences were also observed, interspersed among these holes, two regularly to each hole, crowned with some very fine white hairs, which being wiped off, two white spots appeared.

"The animals, when single, ran about pretty briskly, but in general, on opening the cells, they were so numerous, as to be crowded over one another. The substance of which the cells were formed cannot be better described, with respect to appearance, than by saying it is like the transparent amber of which beads are made. The external covering of the cells is about the twenty-fourth part of an inch in thickness, it is remarkably strong, and able to resist injuries; the partitions are much thinner. The cells are, in general, irregular squares, pentagons and hexagons, about an eighth of an inch in diameter, and a quarter of an inch deep; they have no communication with each other. All those opened during the time the animals were issuing from them, contained in one side, which occupied half the cell, a small bag filled with a thick jelly-like red liquor, replete with what I take to be eggs. These bags adhere to the bottom of the cells, and have each two necks, which pass through holes in the outward coat of the cells, forming the excrescences we have mentioned, ending in some fine white hairs. The other half of the cells have a distinct opening, and contain a white substance, like a few filaments of cotton rolled together, and a number of the little red insects themselves, crawling about, ready to make their exit. Their portion of each cell is about one half, and I think must have contained nearly one hundred of these animals. In other cells less forward, I found a thick, red, dark, blood-coloured liquor, with numbers of exceedingly minute eggs, many times smaller than those found in the small bags which occupied the other half of the cells."

These animals undergo several changes in the course of their existence. from the egg proceeds the *larva;* its next change is into the *pupa*, from which, at length, the perfect insect issues.

As an article of commerce, lac is known in Europe under the names of *stick-lac*, *seed-lac*, and *shell-lac*. The first is the lac in its native state, as it is found adhering to the twigs on which it was originally deposited. The seed-lac is the yellowish hard resinous powder, which remains after the red colour of stick-lac has been extracted, as far as it can conveniently be done, by water. Shell-lac is produced from seed-lac, by putting the latter into long cylindrical bags of cotton cloth, melting it by holding the bags over a charcoal fire: and when the lac melts, straining it through the cloth by twisting the bags. The lac thus strained is allowed to fall upon the smooth plank of a plantain-tree, and is there spread into thin plates; in this form it is brought to Europe, and is employed in the manufacture of sealing-wax and varnishes. It forms the basis of the well-known French polish, and is used by hatters in the making of waterproof hats.

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[*] Magazine of Domestic Economy.

The colouring matter which the stick-lac contains, is employed in dyeing; and the deeper the colour of the sample, the better it is for that purpose. The colour which it affords, is less brilliant than the scarlet obtained from cochineal; but it has the advantage of possessing greater durability. It is said, that it may be employed to good purpose, by mixing a certain quantity with the cochineal, when, if it is not in too large a proportion, the scarlet will be rendered more permanent, without losing any thing of its beauty. The lac-colour is preserved by the natives, upon flakes of cotton-wool dipped repeatedly into a strong solution of the lac-insect in water, and then dried. Dr Bancroft endeavoured, by certain processes, to improve the brilliancy of the colouring-matter of the lac, and he so far succeeded, as to dye several small pieces of cloth of a brilliant scarlet, equal to that produced by cochineal; but when the experiment was tried on a larger scale, from some ill-understood cause, it was unsuccessful.

A very singular use is made of this substance in India; namely, forming it into grindstones, by the following plan: "Take of river-sand three parts, of seed-lac washed one part, mix them over a fire, and form the mass into the shape of a grindstone, having a square hole in the centre; cement it to an axis with melted lac, heat the stone moderately; and while revolving rapidly on its axis, it can be easily formed into a circle." Polishing grindstones are only made of such sand as will pass easily through fine muslin, in the proportion of two parts sand to one of lac. Some persons, instead of sand, use the powder of a very hard kind of granite. These grindstones cut very fast. The same composition is formed upon sticks for cutting stones, shells, &c., by the hand.

In 1837, the quantity of lac imported, re-exported, and consumed at home, was as follows:

Imported.		Re-exported.		Consumption.	
Lac-dye.	*Shellac.*	*Lac-dye.*	*Shellac.*	*Lac-dye.*	*Shellac.*
1,011,674	2,217,679	133,969	574,391	423,235	574,273

In 1832, the specific duty on lac was fixed at 6s. per hundred-weight. The price of fine lac is from 3s. to 4s. per pound, and of shellac from £6 to £7 per hundred-weight.

LAHORE; an extensive province in the northern part of Hindostan, lying between the 30th and 34th degree of north latitude. It is bounded on the north by Cashmere, on the south by Delhi, Moultan, and Ajmeer, on the east by the mountains of Hindostan, and on the west by the Indus. It is about 340 miles in length, and 200 in breadth. It is divided into two districts, called the Punjab and the Kohistan of Lahore. The Punjab is the flat country to the south-west, and is so called from the five celebrated rivers by which it is intersected; the Kohistan is the mountainous one to the north-east. The population of Lahore is estimated by some at about 20,000,000. They consist of Sikhs or Singhs, Jauts, Rajpoots, Hindus of lower castes, and Mahommedans. In the Punjab one-third of the inhabitants are Singhs or Sikhs. On the north-western borders the inhabitants are chiefly Afghans. The Punjab is the most fertile portion of Lahore. In it wheat, barley, rice, pulse, sugar and tobacco are cultivated. In some of the districts near the Indus, the manufacture of silk goods is extensively carried on, and large quantities annually exported to Cabul and Candahar. White cotton goods, indigo, sugar, and rice are exported to the countries west of the Indus and to Cashmere, in return for which shawls, various kinds of cloths, and fruits are imported. Horses and camels are exported to the south, in return for which the merchants bring back metals, spices, and European manufactured goods.

The Sikhs are a sect sprung from Nanuk, a native of Lahore, who flourished in the fifteenth century. Sikh means in Sanscrit *disciple*. Nanuk left two sons, from whom are descended 1400 families, called Shahzadehs, who are much venerated. The Sikhs have gradually increased in strength. Gooro Govind, who died near the beginning of the last century, new-modelled their government, and trained them into a band of ferocious soldiers, changing their name from Sikh to Singh, signifying a lion. In 1762 and 1763, the Sikhs were almost exterminated by the Afghans, but their undaunted resolution enabled them to overcome their misfortunes, and they at last succeeded in acquiring and consolidating their present territories. Up to the beginning of the present century, Lahore was divided into a number of petty principalities, who were continually at war with each other. Runjeet Singh, an ambitious chief, amalgamated these into one kingdom, and brought the whole under his authority. His commander in chief was a Frenchman, General Allard, one of the officers of the old imperial army of Napoleon. General Allard was formerly attached to the staff of marshal Brune. He quitted France at the downfall of Napoleon, with the intention of going to the United States of America, and had already paid for his passage on board one of the frigates of the Union, when he met with an Italian officer, who, like himself, was about to seek his fortune in a foreign clime, and was induced by the Italian to give up his American trip, and go into Egypt. He did so, and met with but a cold reception from the Pasha, and no employment. He then went into Persia, and at Ispahan he was heartily welcomed by the Abbas-Mirza, who conferred upon him the title of colonel, and treated him as such: he promised him the command of a regiment, but failed in his promise. Fortunately for Allard there was at the court of Ispahan an old king of Cabul, whose brother had usurped his throne and deprived him of his sight; this king, an experienced old man, told Allard that in Cabul he would be sure of welcome and employment. Cabul is situated between Persia and the principality of Cachmere. Allard went there, and found in fact that there was a king who could well appreciate the services of an European officer. But scarcely was Allard established in Cabul, when he learnt that there dwelt, two hundred leagues further on, a skilful and bold chief, who was employing all his energies and resources in founding an kingdom. This was the kind of chief that Allard desired to serve: he went therefore to Lahore, and found Runjeet Singh, who was then a rajah. Allard met with welcome and employment from the rajah, whose confidence he soon obtained: he placed under Allard a few men, who, being disciplined according to the military system of France, became the nucleus of the rajah's future army. Next, Allard disciplined a hundred men, who were thus instructed in the duties of military officers. Then he organized a regiment; then a brigade; then a division; his reputation increasing with the number of his soldiers, and the confidence of the rajah keeping pace with the growth of his army. This army soon became the terror of the neighbouring princes, who disputed with Runjeet Singh the sovereignty of the kingdom of Lahore: they were all in succession besieged in their fortresses, attacked in their retreats, beaten in open field, or vanquished in the defiles and fastnesses of their mountains. At length none resisted; and at the end of a few years Runjeet Singh was the only king of this country. It was the triumph of discipline over the rude warfare of the barbarian, and Allard was loaded with honours and with wealth: he had a palace at Lahore, a crowd of servants and slaves, and a regiment for his escort. He married a princess, a relation of the king, and was finally named commander-in-chief of the armies of the kingdom: he became, next to Runjeet Singh, the most important, powerful, and absolute personage in this extensive country.

On the 27th of June, 1839, Runjeet Singh died, at Lahore, the capital of the province, in his sixtieth year. The career of this extraordinary chieftain developed the character of a man born to change, or materially influence, the destinies of a vast portion of mankind. Proud, restless, ungovernable, impatient of restraint, he ruled with despotism over twenty millions of people; and from a licentious love of power, and unbounded ambition, aided by the fertile powers of his mighty genius, he rose from a common thief to be a conqueror of princes. Possessed of a considerable and well-disciplined army, numerous founderies and arsenals, a regular government, and a wealthy exchequer, he became the friend and ally of the British government in India. Runjeet Singh is represented as having had no education in any branch of learning or science. He could not read or write in any language; he did not value knowledge for its own sake, but he had the sense and discretion to appreciate, and apply for his own advantage, that of others. He was in the habit of hearing papers read in Persian, Punjabee, and Hindoo. He was the chief administrator of justice in his kingdom; and was easily accessible to any of his subjects. He displayed perspicuity in his appreciation of character; and the power of tracing the motives of others' actions, gave him a command and influence over all who approached him. His observations and remarks were given ordinarily in short, terse, incoherent phrases, or in the shape of interrogatories. He had great power of dissimulation; and, under the utmost frankness of manner and even familiarity of intercourse, could veil subtle designs and treachery. In action he was personally brave and collected; but his plans displayed no boldness or adventurous hazard. His fertility in expedients was wonderful. His uniform career and conduct through life prove him to have been selfish, sensual, and licentious in the extreme, regardless of all ties of affection, blood, or friendship, in the pursuit of ambition or pleasure. He plundered and reduced to misery, without the slightest feeling of remorse, widows, orphans, and families; but he was not blood-thirsty, for he has never taken life, even under circumstances of great aggravation. Indeed, his laws prohibit the punishment of death. A criminal sometimes had his nose or his ears cut off, but never his head. It was also not uncommon to cut off the hands of criminals; but in serious cases, and where the culprit had again committed the crime for which he had been once already punished, the tendon Achilles was cut through. With the aid of his confidential officer, general Allard, he brought his army into the finest state of skill and subordination; but his troops still wear the turban. He was attached to the chase; and had an ardent passion for precious stones and fine horses, to procure which he has often undertaken a disproportionate military expedition. His jewels are said to be the richest and finest in the world; and the riches and magnificence of his court and palace, the splendour of his travelling equipage, and of all his equipments, exceeded all that we hear of among oriental princes. His stature was low, and the loss of his left eye from the small-pox took away from his appearance, which, however, was still far from being unprepossessing, for his countenance was full of expression and animation, and set off with a handsome flowing beard, gray, at fifty years of age, and tapering to a point below his breast. He was latterly so emaciated and weak as to be compelled to adopt a singular method of mounting the tall horses on which he loved to ride; a man knelt down before him and he threw his leg over his neck, when the man rose with the Maha Rajah mounted on his shoulders. He then approached the horse, and Runjeet Singh putting his right foot in the stirrup, and holding by the mane, threw his left leg over the man's head and the back of the horse into the stirrup on the other side. A portrait of the Maha Rajah is given in Mr Princep's work on the Origin of the Sikh Power, &c.

Four princesses, his wives, and seven slave girls, were permitted to burn themselves on his funeral pyre. The description of Arvalan's funeral (in Southey's *Curse of Kehama*), the burning of his two queens, and the train of female slaves, becomes, with a very trifling adaptation, the historical record of the real obsequies of the late monarch of Lahore. On the 2d of July his ashes were removed towards the sacred Ganges, at Hurdwar. The procession left the palace at about an hour after sunrise, and moved through the city of Lahore in the following order. One squadron of Sikh lancers, one by one, on account of the narrowness of the streets, followed by five gold cloth flags carried on foot; a golden khassah or palkee, containing the ashes of the Maha Rajah; the premier, Rajah Deban Singh, on foot to the left, bearing a peacock feather chowry, and driving away the flies; and on the right Jamahadar Khoossial Singh, also on foot, bearing a golden punkah; on the left was the Maha Rajah's principal chutry bearer, carrying a golden chutry, and immediately behind came his personal servants, such as dressers, chowry, walla, cup bearer, &c. A little behind came four khassahs, containing the ashes of the four ranees burnt with him, followed by a fifth, containing the ashes of the seven slaves also burnt with him, and immediately behind marched his favourite horses, covered with gold; about fifty paces behind them came the heir to the throne, Kurruck Singh, on an elephant, dressed in plain white muslin, followed at a short distance by the whole court in the same dress without any kind of arms, and mounted on elephants. On arriving at the Delhi gate, the procession received a salute of eleven cartridges per gun from captain Ford's, Elli Bukh's, Emamsha's, and Sooltan Mamood's artillery (amounting to about twenty six pieces), and proceeded through a street, formed of a squadron of the body guard, captain Ford's, and Mr Steinbach's two battalions of infantry, at a slow pace; and receiving the salute of those two regiments, turned towards Hamb (a favourite barrah durry of the Maha Rajah about six miles from Lahore,) being the first march.

A few days before the Maha Rajah died, he gave away to fuckeers, gold and silver howdahs, elephants, horses, saddles, and bridles of the most costly articles covered with jewels and precious stones of all kinds and descriptions, gold and silver plates, precious stones, shawls, cows, buffaloes, hard cash, in gold and silver, &c. amounting, people say, to a crore of rupees. The Maha Rajah, from the day of his illness to that of his death, must have given away to fuckeers, brahmins, &c. nearly three crores of rupees, including what he sent to Gaya Gaya and Juggernaut. Runjeet Singh left the celebrated diamond, called the "*Khah-i-noor*," or *Mountain of Light*, which has so long been coveted by all the princes of India, as a legacy to be worn by the chief idol of Juggernaut.

LAING, WILLIAM, an eminent bibliographer, was born at Edinburgh, 20th of July, 1764, and at the usual age was sent to the grammar High school of Canongate. Having fixed on the profession of a printer, he served an apprenticeship for six years, but abandoned this employment, as his eyesight was somewhat delicate; and a favourable opportunity presenting itself, he commenced business on his own account, as a bookseller in the Canongate, in 1785. A few years afterwards he removed from his first situation lower down the street to Chessel's Buildings, where he remained till 1803, when he removed to the South Bridge; having, from the year 1786, continued to issue an almost annual succession of catalogues. Modest and unassuming in his manners, and in the general tone of his temper, Mr Laing's knowledge in his profession was uncommonly accurate and extensive. Few surpassed him in an acquaintance with the history of particular editions of the works of the celebrated authors of antiquity. He knew which were scarce, and was well informed of the price that was put upon them, not merely in this country, but likewise on the continent. At a very critical period, in 1793, he first visited Paris, with the design chiefly of extending his knowledge of that particular department of business, in which he had now become eminent; for when any scarce or valuable work was wanted, his shop was known as the place where it was most likely to be found. After the peace of Amiens, and on several successive occasions, he visited France and Holland for a similar purpose. At a still earlier period, being informed that his majesty Christian VII. king of Denmark, had been advised to dispose of the numerous duplicates which were in the royal library at Copenhagen, he resolved to undertake a voyage to Denmark. This he accordingly did in 1799, chiefly at the instigation of Niebuhr, the distinguished investigator of Roman History, who was then a student in the university of Edinburgh. After remaining some time at Copenhagen, he concluded an arrangement with the right hon. privy counsellor Dr Moldenhawer, the king's librarian, which proved satisfactory to both parties. During the war, when there was hardly any communication with the continent, Mr Laing commenced the publication of the Greek Historians. Nothing of the kind had ever been attempted in Edinburgh, or even in Scotland, excepting by the Foulis', the celebrated printers in Glasgow. In 1804, he published, in six volumes small 8vo., the works of Thucydides in Greek, accompanied with a Latin translation. Its title is "Thucydides Græce et Latine. Accedunt Indices ex Editione Wassii et Dukeri." In 1806 appeared in small 8vo., in seven volumes,—"Herodotus Græce et Latine. Accedunt Annotationes selectæ necnon Index Latinus, ex Editionibus Wesselingii et Reizii." Xenophon was next published—"Xenophontis quæ exstant Opera, Græce et Latine, ex Editionibus Schneideri et Zeunii. Accedit Index Latinus." This appeared in 1811, in ten volumes, of the same size and type with the editions of Thucydides and Herodotus. Much of Mr Laing's time was latterly devoted to the Commercial Bank of Scotland; an institution which has proved of essential benefit to mercantile business in that country, of which he had been one of the original promoters, and for some years one of the ordinary directors. He died on the 10th April 1832, leaving a widow and family.

LAMARCK, (a.) The chevalier de Lamarck died on the 18th Dec. 1829, in the eighty-fifth year of his age. The work on which Lamarck's fame is principally founded, and which has conferred a most important service on zoology, is his *Histoire Naturelle des Animaux sans Vertèbres*. From the time of its appearance, this work has ever been regarded as one of the highest authority, and has formed the principal regulator of most departments of this extensive race of animals. The work extends to seven octavo volumes, and is entitled "Natural History of invertebrate Animals, presenting the general and particular Characters of these Animals, their Distribution, Classes, Families, Genera, and the principal Species referable thereto." The first volume is entirely occupied with an introduction, the object of which is to determine the essential characters of an animal, its distinction from vegetables and other natural bodies, and to explain the fundamental principles of zoology. This introduction may be regarded as forming a synoptical view of all the author's peculiar opinions on the origin and development of living beings, which are illustrated more in detail in separate works. The first five volumes are written entirely by Lamarck, but he was assisted in the part relating to insects by M. Latreille. A portion of the sixth volume and the whole of the seventh, were drawn up by his daughter from his notes and papers, his want of sight preventing him from undertaking that labour himself; and that part of the sixth, which relates to the *mytilacés*, *malleacés*, *pectinides*, and *ostracés*, is written by M. Valenciennes. The first part was published in 1815, and the other parts appeared at intervals up to 1822, when the whole was completed. Besides a luminous and comprehensive account of the general history of the different groups and genera, the principal species are cited and briefly characterized, with their synonymes, reference to figures, and localities. The enumeration of species sometimes includes a the known kinds, and is particularly copious and instructive in relation to sponges and shell-bearing mollusca. The genera are established with much discrimination, and judiciously characterized by obvious properties, such as form, proportion, nature of the surface, and structure. The synonymy is unravelled with great care, and the descriptions, though necessarily often very brief, are in general highly satisfactory. These circumstances have rendered this work the most valuable system that has ever appeared of the invertebrate animals; and it has formed the guide to most authors who have since written on the subject.*

The phrase *invertebrate animals* originated with Lamarck, and it expresses, as Cuvier remarks, perhaps the only circumstances in their organization which is common to them all. They were previously known as *white-blooded animals*, a designation which was soon shown to be improper, by the discovery that an entire class (the *annelides*) possesses red blood. The system of Linnæus and Bruguière formed the basis of his course when he first began to lecture on the subject; he subsequently adopted a new classification, founded on their anatomy, which had been published in 1795. This he afterwards modified in various ways, as new discoveries were made, and as new relations suggested themselves to him. In his system of invertebrata, forming an octavo volume, published in 1810, he adopted the class of *crustacea*, and created that of *arachnides*, a step which he judged necessary, in consequence of some new information that been communicated to him on the heart and pulmonary sacs of spiders. In a previous work he had admitted the *annelides* to the rank of a separate class, in consequence of Baron Cuvier's observations on their circulating organs and the colour of their blood, which resembles that of the vertebrate races. Two other classes were created, in his "Philosophical Zoology," viz. the *infusoria* and the *centripedes*; and in this work also he first deviated from the ordinary practice of commencing the arrangement with the most perfectly organized, the inverse order being more in accordance with his theoretical views, which assumed a gradual *progression* in the composition of animal organs, proceeding from the most simple to the most complex.

To the history of fossil shells, Lamarck communicated a remarkable impulse. This highly important and interesting subject had long attracted the attention of geologists, but owing to the difficulties with which it is invested, it still remained n comparative obscurity. One of the facts most desirable to be ascertained in relation to these remains, was, whether they were identical with pecies now living, a point which could be determined only by a careful comparison. Applying to his investigation that profound knowledge which e had acquired of recent shells, Lamarck was enabled to illustrate the subject in a most satisfactory manner, and to throw light on some of the most anomalous phenomena which it presents to the inquirer. Besides his extensive acquaintance with the *testacea*, he enjoyed another advantage for entering upon an inquiry of this nature by residing t *Paris*, the vicinity of which has long been celebrated for the number and variety of its fossil productions.† The result of his investigation appeared in several of the earlier volumes of the Annals of the Museum; but the memoir was never brought to a conclusion. It was accompanied with a quarto volume of plates, containing figures of great beauty and accuracy.

Such are the principal subjects to which Lamarck's attention was directed, together with some of the results to which his investigations led him. After his establishment in the Museum of Natural History, much of his time was occupied with the objects whose history he was appointed to teach; and so favourably were his labours in this department received by the public, that his interest as well as his inclination would have conspired to make him cultivate it to the uttermost. But his exertions received an early check, and were at last entirely stopped by the inroads of a most afflicting calamity. His eyes had long been weak, and, as he advanced in years, they became so diseased, that he was obliged to refrain from using them for the examination of any minute object. Hence it was that he had recourse to the celebrated Latreille to assist him in that part of his system of invertebrata which related to insects. Notwithstanding every precaution, the disorder increased, and at last produced total blindness, which continued till his death. "This event was the more distressing," says Cuvier, "because it overtook him in such circumstances that he could obtain none of those means of alleviation which might otherwise have been procured. He had been married four times, and was the father of seven children. The whole of his little patrimony, and even the fruits of his early economy, were lost in one of those hazardous investments which shameless speculators so often hold out as baits to the credulous. His retired life, the consequence of his youthful habits, and attachment to systems so little in accordance with the ideas which prevailed in science, were not calculated to recommend him to those who had the power of dispensing favours. When numberless infirmities, brought on by old age, had increased his wants, nearly his whole means of support consisted of a small income derived from his chair. The friends of science, attracted by the high reputation which his botanical and zoological works had conferred on him, witnessed this with surprise. It appeared to them, that a government which protects the sciences, ought to have provided for the wants of a celebrated individual; but their esteem for him was doubled, when they saw the fortitude with which the illustrious old man bore up against the assaults both of fortune and of nature. They particularly admired the devotedness which he inspired in such of his children as remained with him. His eldest daughter, entirely devoted to the duties of filial affection for many years, never left him for an instant, readily engaged in every study which might supply his want of sight, wrote to his dictation a portion of his last works, and accompanied and supported him as long as he was able to take some exercise. Her sacrifices, indeed, were carried to a degree which it is impossible to express; when the father could no longer leave his room, the daughter never left the house. When she afterwards did so, for the first time, she was incommoded by the free air, the use of which had been so long unfamiliar to her. It is rare to see virtue carried to such a degree, and it is not less so to inspire it to that degree; and it is adding to the praise of M. de Lamarck, to recount what his children did for him."

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* The most recent and probably the best edition of the *Animaux sans Vertebres*, is in eight volumes octavo, augmented with notes by M. M. Deshayes and Milne Edwards.

† Cuvier conceives that the basin of Paris contains a greater accumulation of fossil shells than any other place of equal extent. At Grignon, no fewer than six hundred different species have been collected in a space not exceeding a few square toises.

LAMB, Charles; an essayist and critic, distinguished for subtilty of wit, delicacy of humour, and profound sympathy with every thing human, was born in Crown Office Row, Inner Temple, London, on the 18th Feb., 1775. His father was clerk to Mr Salt, one of the benchers of the Inner Temple, and Charles was the youngest of three children, John, Mary, and Charles. In the essays of Elia, John and Mary are described under the names of James and Bridget Elia, and they are otherwise veiled by the title of *cousins*, but the rest is all verity. His father is also celebrated under the name of Lovell, in the essay entitled, The Benchers of the Inner Temple. At the age of seven, Charles was entered at Christ's hospital, and remained a scholar of that establishment till he had reached his fifteenth year. Coleridge was among his school-fellows, and thus originated a friendship between the two which lasted with life. His own account of his school-days is admirably given in his paper, entitled, "Christ Hospital Five and Thirty Years ago." On the completion of the usual period allotted for education at that school, he was first employed for a short time in the South Sea House with his brother; but on the 5th of April, 1792, he obtained an appointment in the Accountant's office of the East India Company, and remained in the employments of these princely merchants till the 29th of March, 1825, by which time his salary had gradually risen to above £700 per annum, when he was allowed to invalid upon the handsome pension of £450, which he enjoyed till his death, on the 27th of Dec., 1834. He lived a bachelor with his sister in various dwellings, but for the greater part of his life in the Temple, which he preferred to all other places. Latterly, he sequestered himself in the suburbs of London, at Colebrook Row in Islington, at Enfield, and at Edmonton, where he died. His death was caused by erysipelas in the head, brought on by an accidental fall, in which his face had been slightly injured.

The life of Charles Lamb is unusually meagre in events, his publications forming almost the only epochs. His first appearance as an author was in a small volume of poems, published in 1797, in conjunction with his friends Coleridge and Lloyd. In the following year, the blank verse of Loyd and Lamb contained in this volume was republished in a thin duodecimo, under the title of "Blank Verse of Charles Lloyd and Charles Lamb." The volume obtained no notice, or was dismissed by reviewers with a sneer. "A Tale of Rosamond Gray and Old Blind Margaret," in prose, published the same year, was better received. This tale has been much praised for its sentiment and pathos, but we confess it is the only production of Charles Lamb's for which we have no liking. The plot, or rather the point upon which the story hangs, is revolting, and the sentiment is so overwrought as to appear affected. In 1802, he published "John Woodvil, a tragedy," along with "Fragments from Burton," a favourite author. "John Woodvil," written in imitation of the early English dramatists, was coldly received, and its peculiarities made the subject of merriment in the Edinburgh Review. "Mr H.," a farce, was Lamb's next production. It was performed at Drury Lane theatre in December, 1806, but without success. The story is that of a young gentleman, named Hogsflesh, who, afraid that his name might stand in the way of a certain lady accepting his hand, passes as *Mr H.* only, and encounters numberless difficulties in keeping his real name from her knowledge. At the close, however, it is necessarily divulged, upon which the sentimental lady faints, but all is set to rights by Mr H. showing letters patent, empowering him to change his name from Mr Hogsflesh to Mr Bacon. In 1807, he published a series of stories founded on the plays of Shakspeare, in which the language of Shakspeare is preserved wherever possible, and the outline of the plot brought within the apprehension of children. In this work his sister Mary had a hand. The tales of King Lear, Macbeth, Timon of Athens, Romeo and Juliet, Hamlet, and Othello, are by Charles; the others by Mary Lamb. In conjunction with his sister, he also compiled two other popular books for children,—"Mrs Leicester's School," and "The Adventures of Ulysses." In 1808 appeared his "Specimens of English Dramatic Poets who lived about the time of Shakspeare, with Notes." This work slowly but gradually wrought its way into notice, and was largely instrumental in creating a relish for the early English dramatists. In 1810-11, he contributed to a quarterly magazine, edited by Leigh Hunt, entitled "The Reflector," a series of papers, including those on Hogarth's pictures and the tragedies of Shakspeare. In 1818, his poems and essays were collected and published in two little 12mo volumes, under the title of "The Works of Charles Lamb." This, he himself said, should have been called his Recreations rather,—his veritable works being to be found in the ledgers of the East India House. The most celebrated of Mr Lamb's writings appeared after the establishment of the London Magazine, in 1820, under the auspices of Mr John Scott, when he began to contribute to it, under the name of "Elia." Elia was the name of an old foreigner, a clerk in the South Sea House, in Lamb's young days, and it was adopted without any applicability to himself. The Essays of Elia in the London Magazine were subsequently collected and published. Later papers, published in the Englishman's Magazine, the Athenæum, &c. appeared shortly before his death, with the title of "The Last Essays of Elia." "Album Verses" published in 1830, and two dramatic sketches which appeared in Blackwood's Magazine about the same time, nearly complete the list of his writings. After his death a collection of his works was made by Mr Moxon, and published by him, the poems in one volume, the prose in three. "The Letters of Charles Lamb, with a sketch of his Life, by T. N. Talfourd," appeared in 1837, in 2 vols. 12mo.

The place which Lamb holds in English literature is altogether unique and peculiar; but the sphere of his excellence is limited. In the first place, he cannot be considered as a poet, in the higher sense of the term. His mind was too whimsical for sustained beauty, within the usual limitations of poetry. It was ever wandering off in some fantastic train of thought; some out-of-the-way analogy, unfit for the serious muse. He had but little dramatic talent; his attempts in the theatrical way proved failures. Indeed, it is plain enough that to conceive and represent a character dramatically, requires a steadiness of [illegible] clearness of purpose, a power of changing places with imaginary personages, which never belonged to Charles Lamb. His imagination laid hold of [illegible] ties of character with wonderful readiness; and he described, not represented, them with truth and wit. But he did not, and could not, bring a consistent being before us, and exhibit it in all the varieties of action and passion. His play of "John Woodvil" has a few fine poetical passages, and some happy imitations of old English dramatists; but it shows no talent for the stage. In his own walk, however, he was unrivalled. The short, humorous essay he carried to a point of excellence never before attained. His style is ever happy and original; his wit, of the rarest and most pungent description. The native peculiarities of his mind appear, fresh, racy and delightful. The love of quaint conceits, which was a part of his nature, was increased by his enthusiastic study of the early English authors, who furnished his mind with its most genial sustenance; and his easy flow of expression and pithy language received a certain antique colouring from the same source. His wit, clothed in this curious garb, comes upon the mind with the most irresistible effect. We regard it as something singular, something remote from every thing else within our knowledge, and yet wholly free from affectation. His mind sympathised so completely with his favourite writers, that he became almost their contemporary, and poured out his rich drollery in their quaint expressions, with the same natural gush of imagination and whim, as they would have done themselves. It is not easy to say in what his wit mainly consists. Certainly it does not depend for its effect upon single brilliant sallies; upon pointed antithesis; upon repartee. It is rather a quality, a flavour, with which all his thoughts and images are impregnated. It is the concentrated fragrance of a thousand scattered perfumes. The senses are delighted with the united sweets, but the several ingredients escape the minutest analysis. If we ay that his perception of the ludicrous is his trongest point, we speedily find ourselves in the wrong. Others have this power to a greater xtent than he, without a millionth part of his wit. He is constantly punning; but that is not he secret. His wit is not the perception of ludirous images; it is not a play upon words; it is not he sudden exhibition of unexpected relations; but t is something wholly inseparable from the texture f his mind, and his habits of association, and suming all the outward forms, of which language capable. It is a subtile spirit, pervading all his ritings, and reaching the reader's mind by a thound different avenues. We can neither seize it or escape from it.

Turning from his literary character to his private fe, we find it marked by as strong peculiarities as s writings. Though indifferent to the benevont projects of the day, his affections for those out him were strong and tender. The amiable alities of his heart endeared him to many, not ly of different but of opposite characters. He d a strange facility in passing over the disagreele things in his associates, and fastening only on ose traits which pleased him. This was partly ing to his indifference to great principles of ion, and his dislike of change and agitation. was consequently surrounded by people, whose ces must have occasionally produced a strange cord, that all the gentleness of his nature could rcely hush. "Lamb's indulgence," says Sernt Talfourd, "to the failings of others could dly be termed allowance—the name of charity is too cold to suit it. He did not merely love his friends in spite of their errors, but he loved them, errors and all, so near to him was every thing human." But the most pleasing trait in his private life, is the extraordinary love he bore his sister. She had taken care of his sickly infancy, and in return, he devoted the flower of his life to her comfort and happiness. He abstained from forming any other and closer ties, that he might bestow his undivided care upon the companion of his childhood. How well that high duty was performed, and how justly this beautiful part of his chequered character was appreciated by his friends, is feelingly shown in Serjeant Talfourd's volumes.

LAMB, Hon. George, under secretary of state for the home department, and M. P. for Dungarvon, brother to lord viscount Melbourne, was born July 11, 1784, being the fourth and youngest son of Penniston, first viscount Melbourne, by Elizabeth, daughter of Sir Ralph Milbanke, bart. He was educated at Eton, where, together with his brothers, he was under the immediate care of the late Rev. Dr Langford; and at Trinity College, Cambridge, where he was created M.A. in 1805, and passed through the usual course of university studies with greater success than, from his retired habits and unpretending character, was generally known. He was early entered of Lincoln's Inn, and called to the bar, after which he for a short time went the northern circuit; but he soon ceased to practise, partly on account of ill health, and devoted his attention principally to literature. His brother, the hon. Penniston Lamb, who died in 1805, had also been bred to the law, and left him an extensive library. Mr Lamb was one of the most active members of the committee of management of Drury Lane Theatre, when the earl of Essex, lord Byron, and the hon. Douglas Kinnaird, were his associates. He was himself the author of "Whistle for it," an operatic piece, 1807. He also published some minor poems; but his most elaborate and remarkable work, was a translation of Catullus. In the year 1819 he was put forward by the Whigs to contest the representation of Westminster against the Radicals, on the death of Sir Samuel Romilly. The contest lasted fifteen days, and terminated as follows:—

Hon. George Lamb, .	4465
Mr Hobhouse, . . .	3861
Major Cartwright, .	38

In 1826, he entered parliament, through the interest of the duke of Devonshire, as member for Dungarvon, and he had represented that borough in four parliaments at the time of his death. On the accession of the Grey ministry, he became under secretary of state to his brother lord Melbourne in the home department. His official duties were executed in an efficient manner, and his speeches in parliament were delivered in a sensible and intrepid style. In private society Mr Lamb was unreserved, communicative, and agreeable; his accomplishments were admitted by all who knew him; his kindness of heart and mildness of temper were proverbial. He married, May 17, 1809, Mademoiselle Caroline-Rosalie Adelaide St Jules, a relation of the duke of Devonshire, and with that estimable lady, of a character entirely assorting with his own, he enjoyed the truest domestic felicity. His death took place on the 2nd Jan. 1834.

LANCASTER, Joseph, the promulgator of the system of mutual instruction known by his name, was born in England in 1771, and bred a quaker. In 1798, he commenced schoolmaster, adopting the plan of instruction invented by Dr Bell at Madras, who in 1797, published a pamphlet on the subject, entitled "An Experiment in Education, made at the Male Asylum of Madras, suggesting a system by which a school or family may teach itself, under the superintendence of the master or parent." Joseph, however, always denied being indebted to Dr Bell for his system. He received great encouragement from many persons of the highest rank, which enabled him to travel over the kingdom, delivering lectures, giving instructions, and forming schools. Flattered by splendid patronage, and by unrealised promises of support, he was induced to embark in an extensive school establishment at Tooting, to which his own resources proving unequal, he was thrown upon the mercy of creditors. Concessions were, however, made to his merit, which not considering as sufficient, he abandoned his old establishment, and left England in disgust; and about the year 1820, went to America, where his fame procured him friends, and his industry rendered him useful. He died at New York, Oct. 24, 1838, in consequence of having been run over by a waggon the day before. The titles of his publications were as follow:—"Improvements in Education as it respects the industrious classes of the community, containing, among other important particulars, an account of the Institution for the Education of One Thousand Poor Children," 1803. "A Letter to the Right Hon. John Foster, on the best Means of Educating and Employing the Poor in Ireland," 1805; 8vo. "An Appeal for Justice, in the cause of Ten Thousand Poor Children, and for the Honour of the Holy Scriptures; being a Reply to the Visitation Charge of Charles Daubenny, Archdeacon of Sarum," 1807. "Outlines of a Plan for the Educating of Ten Thousand Poor Children, by establishing Schools in country towns and villages, and for uniting works of industry with useful knowledge," 1807; 8vo. "A Spelling Book for the use of Schools," 1808; 12mo. "Account of the Progress of J. Lancaster, from the year 1798," 1811; 8vo. "Substance of a Lecture delivered at the Freemasons' Tavern," 1812; 8vo

LANDON, Letitia Elizabeth, a highly gifted writer, known to all lovers of poetry by her initial signature of "L. E. L.," was the daughter of an army-agent, and was born and educated at Chelsea. The date of her birth we have not ascertained, and indeed we have to regret generally the extreme meagreness of our information regarding her personal history. She was the niece of Dr Landon, dean of Exeter, who died on the 29th of December, 1838, two months after her own most melancholy end. It is supposed that she has depicted the real history of her own childhood, in her volume called "Traits and Trials," 1837. On the 7th of June, 1838, she was married to George Maclean, Esq., governor of Cape-Coast Castle, South Africa, and was only just settled in her new residence there, when her death took place, on the 15th October, same year, under very afflicting circumstances. On the morning of that day, she was found dead in her own room, with an empty bottle in her hand, labelled "Acid Hydrocianicum Dilutum," (diluted prussic acid.) It is supposed that she had taken some of this medicine as a cure for spasms, to which she was subject, but had inadvertently or accidentally exceeded the proper quantity. Those friends who knew her best have no suspicion that she intentionally committed suicide. While they scout this idea, they readily admit that, from her peculiar temperament, she was one extremely likely to resort to a desperate remedy for the cure of any personal ailment. What removes further the suspicion of suicide is, that a letter was found on her desk, which she had written to a friend in Scotland, dated the morning of her death, in which she expresses herself as satisfied and pleased with Cape Coast and its inhabitants, and as finding every thing there much better than she had expected. On the day of her death an inquest was held on her body, at which Emily Bailey, her servant, deponed, that between the hours of eight and nine in the morning, having received a note addressed to Mrs Maclean, from Mr Swanzy, she went to her room for the purpose of delivering the same to her, and found some difficulty in opening the door, in consequence of Mrs Maclean having fallen against it; that deponent, on entering the room, discovered Mrs Maclean lying on the floor with an empty bottle in her hand, (which bottle being produced was labelled "Acid Hydrocyanicum Dilutum, Pharm. Lond. 1836,") and quite senseless. Mr Maclean stated, she was very subject to spasms and hysterical affections, and had been in the custom of using the medicine contained in the small bottle produced, as a remedy or preventive, which she told him had been prescribed for her by her medical attendant in London. Mr Cobbold, the surgeon in attendance, gave his opinion "that death was caused by the improper use of the medicine. The body after death was perfectly natural; he imagined that Mrs Maclean, not having received the usual benefit from the prescribed quantity, was induced to exceed it, or that the spasms may have come on when she was in the act of taking the medicine, and thus involuntarily a greater quantity may have been swallowed. He had no hesitation in ascribing her death to this cause; ten drops would be sufficient to cause death in ten or fifteen minutes, to a person not in the habit of using it; was so fully convinced that the medicine was the cause of her death, that he did not think it necessary to open the body." The jury returned a verdict that death was caused "by her having incautiously taken an over-dose of prussic acid, which, from evidence, it appeared she had been in the habit of using as a remedy for spasmodic affections, to which she was subject."

The fate of "L. E. L." excited a very general sympathy throughout the country. To talent of a high order, she had other claims to admiration in personal charms of no ordinary attraction, and in a disposition the most generous and affectionate. "Brilliant as was her genius," says one of her friends, "her heart was after all the noblest and truest gift that nature in its lavishness had bestowed upon her,—upon her who paid back the debt which she owed for these glorious endowments of heart and mind, by an indefatigable exercise of her powers for the delight of the public, and by sympathies the most generous and [illegible] with human virtue and human suffering. Such perfect kindness and exquisite susceptibility as hers was never supplied as a graceful and fitting accompaniment to genius, or elevated the character of woman."

The following sketch of Miss Landon's literary career is given in the Athenæum. "The early loss of her father, and the early manifestation of a talent facile as it was fanciful, brought her before the world while yet a girl, as an enthusiastic and constant literary labourer. To her honour, it must be added, that the fruits of her incessant exertion were neither selfishly hoarded nor foolishly trifled away—but applied to the maintenance and advancement of her family. It might be partly the early consciousness of this power to befriend others, and partly the indiscriminate flatteries of those by whom she was surrounded and pushed forward at her first entrance into authorship, which encouraged her to such ceaseless composition as necessarily precluded the thought and cultivation essential to the production of poetry of the highest order. Hence, with all their fancy and feeling, her principal works—the 'Improvisatrice,' the 'Troubadour,' the 'Golden Violet,' the 'Golden Bracelet,' and the 'Vow of the Peacock,'—bear a strong family likeness to each other in their recurrence to the same sources of allusion, and the same veins of imagery,—in the conventional rather than natural colouring of their descriptions, and in the excessive though not unmusical carelessness of their versification. It should be remarked, however, that in spite of the ceaseless strain upon her powers, and the ceaseless distractions of a London life, Miss Landon accomplished much for her own mind in the progress of its career; that she had reached a deeper earnestness of thought—had added largely to the stores of her knowledge, and done much towards the polishing and perfecting of her verse. Besides her poetry, Miss Landon's three novels—'*Romance* and Reality,' 'Francesca Carrara,' and 'Ethel Churchill,' remain to attest her powers as a prose writer. They are all of them stories of *entiment*: the two latter relieved by glimpses of such gay and courtly life, as Watteau loved to paint, and Walpole and Lady Mary Wortley Montague to embalm in their correspondence. In right of this spirit, they in some degree reflect the conversation of their authoress, which sparkled always brightly with quick fancy, and a *badinage* astonishing to those matter-of-fact persons who expected to find, in the manners and discourse of the poetess, traces of the weary heart, the broken lute, and the disconsolate willow tree, which were so frequently her themes of song. Another novel was in progress at the time she was snatched away with such awful suddenness, it having been her purpose to maintain her literary relations with England, and her hope to produce yet better and fresher works. Had her life been spared, this hope would, we think, have been fulfilled. As it is, the public will recollect pleasantly what she as achieved, and feel the void caused by the withrawal of her graceful and versatile fancy. Her rivate friends and her literary contemporaries, oo, will remember her long, as one alike kind, ffectionate, and liberal." To this estimate of Miss andon's talents and performances, we may add, at her first productions were brought forward bout the year 1822, in the pages of the Literry Gazette, to which she was mainly indebted r her reputation, and to which she continued for any years a frequent contributor. It is well own how largely she has contributed to many ther periodicals, and to nearly all the Annuals, of me of which she wrote all the poetry, as Fisher's awing-Room Scrap book (eight quarto volumes), e Flowers of Loveliness, and the Bijou Almanac.

LANDSCAPE-GARDENING, (*a.* to the article *Gardening.*) The old English pleasure-garden, as it was called, was constructed on the principle of making nature conform to art, not art to nature. Shrubs and trees were cut into fantastic shapes, walks were measured and squared with mathematical precision, terraces were raised in opposition to valleys, and canals were dug in place of meandering streams. The modern or natural style of gardening was first advocated by Pope and Addison, and more recently by Mason and Walpole; but Milton, in his description of Paradise, seems to have anticipated all English authors on this subject. The first artist who practised the modern style were Bridgeman and Kent, who both lived in the early part of the last century, and the latter of whom carried Pope's ideas of what gardening should be extensively into execution. He banished verdant sculpture, or the clipping of trees into monstrous figures; he disdained to make every division of the garden tally to its opposite; he diversified the walks by groves of oak and cultivated fields; and above all, he abolished walls for boundaries, and introduced sunk fences. The country-seats in which the modern style was first employed are described by Shenstone, Mason, and Whately. Wright, Brown, Holland, Emes, and Repton, were the most distinguished successors of Kent in the art. Archibald, duke of Argyll, was among the first to introduce foreign trees and plants, with the view of colouring the landscape. The mixture of various greens, and the contrast of forms between our trees and those of other countries, were improvements unknown to Kent. The taste of the present day in landscape gardening has been chastened and refined by the writings of Price, Knight, Alison, Dugald Stewart, and other eminent authors. Gilpin and Prince Pückler Muskau are the most recent writers on the subject. ("Hints on Landscape Gardening." By W. S. Gilpin, Esq. 1832, 8vo. On the same, by Prince Pückler Muskau. Stuttgart, 1834.)

It is not every situation in which much can be effected in the way of actual landscape; therefore, in a level confined spot of limited extent, as will often be the case with the grounds attached to a small villa, it would be better not to aim at it, especially should there happen to be no prospect beyond their boundary, but rather to have recourse exclusively to ornamental gardening, by which term we would, for distinction's sake, denominate that species which admits more of the obviously artificial character, and more of studied, elaborate culture, than the other. The grounds immediately surrounding a residence ought always to partake more or less of this style, to serve as a connecting link between the building and the landscape scenery, properly so termed. Here a high degree of artificial beauty may be tolerated, provided the artificial be not suffered to degenerate into the unnatural; that is, the artificial must not show itself so as to shock common sense. We are aware that flowers disposed in parterres or planted in marble vases, trellises covered with trailing plants, level terraces, and uniform slopes, are not the spontaneous work of nature, but produced by the skill and industry of man; yet so are the roads of a country, the hedges which enclose lands, and tilled fields themselves. The very idea of a garden is that of a carefully cultivated spot; consequently the artificial character may be permitted to manifest itself decidedly in the ornamental species, care being taken that violence is not done to nature herself. Trees clipped into formal figures, and hedges cut to resemble walls, show the artificial carried to an absurd and perverse extreme, not only destroying the forms of the plants themselves, but without having any thing whatever to excuse it on the score of utility, convenience, or other advantage; whereas the disposing of flowers in parterres, or leading creeping shrubs over trellises, exhibits them to advantage, and conformably with their natural properties. A trellis mantled over with the leaves and blossoms of various "climbers" is hardly a more artificial object than a wall clad with ivy, which has certainly never been deemed unpicturesque. Whatever be the degree of ornamental character bestowed upon a garden or pleasure-ground of this description, we must still avoid that strict architectural symmetry which, being here misplaced, tends not to give the charm of regularity that we properly look for in buildings, but merely to produce a monotonous formality. A parterre, for instance, should not exhibit in its plan an exact pattern, hardly regular figures of any kind; neither should there be corresponding features reflecting each other: thus, should there happen to be a terrace, a flight of steps, or any thing else of the sort, it ought not to have its counterpart, but to be considered a distinct and complete feature in itself, as much as what is less evidently the work of human industry. When we once begin to affect *parallelism* and repetition in such matters, we exceed the allowable degree of the artificial, and act nearly as preposterously as we should do were we to cut two rivers or lead two roads running parallel beside each other. It is not the artificial, properly applied, which is contrary either to sound taste, or the picturesque; but that reduplication of it which not only occasions unbecoming formality, but utterly destroys variety. In ornamental gardening there may be the most studied display, and the study itself may be apparent: yet, however elaborately adorned, the whole scene may wear such an air of ease and gracefulness as not only to be most captivating in itself, but also eminently picturesque, and to furnish a delightful subject for the pencil.

For design, or the really artistical part of gardening, no positive rules of any kind can be laid down, either for the ornamental or the landscape style; there we must be governed by individual circumstances and situation. The only general rule which, as in all similar cases, is of least use to those who most need the assistance of any, is not to attempt more than the subject will bear, and to dispose of every thing with a view to effect. Be the grounds ever so decorated and ornate, there should ever be—we will not say simplicity, for the popular signification of that term would not very well convey our meaning, perhaps seem altogether at variance with such degree of embellishment; we will therefore say breadth and repose—qualities exceedingly compatible with richness and gaiety of expression, with brilliancy and sparkling effects. Of course this is to be understood *cum grano salis*; for it is not to be supposed that in such cases repose can be made a predominant characteristic; no more of it, in fact, is desirable than will suffice to temper down and subdue glaringness, to bring the whole into harmonious keeping, and to prevent flutter and fritter. As in aiming at richness we must studiously avoid falling into glare and gaudiness, which are a debased and corrupt species of richness, so must we take heed that we do not mistake the merely fantastic for the fanciful. In the strictly ornamental style, the latter may legitimately be employed, on the condition annexed to every thing which partakes of art, namely, that the result be satisfactory, which it certainly will not prove, should the fanciful exhibit itself only in trivialities and trumpery. No where ought we to be more upon our guard against triviality than where we are obliged to work entirely in little, because we are there most likely of all to fail in it, if we have recourse to factitious embellishment. We do not say that artifices are altogether unallowable, that in garden ornaments only genuine materials are to be employed; pedestals, for instance, of wood, painted to resemble stone, may be tolerated, provided they are introduced in situations where they cannot be too closely approached; but, let the material be what it may, the form of all such objects ought to be most carefully studied and calculated to please a critical eye. Unless this be done, they had much better be omitted altogether, because so far from being ornamental, they prove the reverse, are contemptible in themselves, and betray ignorance and vulgar taste. Happily the wooden Gothic summer-houses, Chinese alcoves, and other cockney conceits, together with "clumsy cupids squirting in a pond," have been long ago exploded by the deserved ridicule they incurred; still it is a question whether we have done well in suffering them to prejudice us against every thing of the kind. By a judicious application of ornamental building and arrangement, much may be effected within a small compass and a striking degree of scenic character obtained.

Unlike the ornamental style, landscape gardening rejects, not only all artifice, but all indication of the artificial. It demands, not on that account less study; rather does it require more, and also the nicest delicacy of judgment and feeling, in order the better to conceal those very contrivances that bestow on the scene charms that nature had originally refused to it. It is not the factitious bloom upon the cheek of a beautiful woman, so much as the unskilfulness with which it is laid on, that offends the eye; the offence consists in the deception being detected. The landscape gardener should bear this in mind; he must beware of painting too thick—of overdoing embellishment, if he pushes beauty to the verge of absurdity. Either he must make no attempt at concealing his machinery, or hide it most effectually, unless he is content to pass for a bungler.

The first requisite Prince Pückler demands in the embellishment of grounds is, that there should be unity of idea,—a *sine qua non* to every work of art. Such unity is not to be confounded with sameness; on the contrary, there must be both variety and contrast, yet of that species which nature exemplifies in her most [illegible]. Contrast must be so managed as to conduce to the harmony of the whole; there must be nothing forced or extravagant in it; and even the transitions from one scene to another, however sudden, should have nothing jarring, or that will disagreeably interrupt our preceding impressions. "It is not indispensably necessary," observes the Prince, "that in order to produce a powerful effect, a park should be of considerable size: owing to the unskilfulness with which it is treated, a very extensive space of land is frequently so cut up into patches as to be greatly reduced; while, by a contrary system, a limited one may be made to appear larger than it really is. In my opinion, therefore, Michael Angelo was altogether mistaken when he said of the pantheon:—"It is a wonder upon earth, but I will elevate it in the air," hoping thereby to obtain still greater effect. By giving the dome of St Peter's the same dimensions, he realized his boast; yet how unfavourable is the result! Erected upon an enormous mass of building, the dome looks comparatively diminutive and unimportant; while the pantheon, placed in a suitable point of view, has for centuries been an object sublime as the vault of heaven. Were they put upon the summit of Mont Blanc, the pyramids would appear no larger than sentry-boxes; and Mont Blanc itself, viewed from a remote distance, appears of no greater size than a heap of snow. Great and small, therefore, are only relative terms. It is not according to what it actually is, but according to what it shows itself to the eye, that we form our estimate of any object; and it is precisely here that a wide field opens itself to the landscape gardener. The tree, for example, which, although a hundred feet high, does not shut out the horizon, when situated in the middle ground of the prospect, would, were it only ten feet in height, do that, if no more than a few paces from us. Consequently, by a skilful management of the foreground, we may most easily, and most speedily, produce important effects, and give a striking physiognomy to the landscape."

But what, the reader will ask, is to be understood by "fore-ground?" A real landscape is not like a picture, where the eye is confined to a single point of view; for what is foreground in one situation becomes middle ground, or distance, when beheld from another. Very true: the same foreground cannot possibly remain; yet, although we cannot retain the *same*, there should always be *a foreground*, that is, along the whole of the direct course through which the spectator passes. It is with reference to such course that the landscape gardener must work; this he must consider *a series of stations* from which so many pictures are to be viewed; casual ones there may be, to be obtained by desultory and random rambling in any direction,—and, indeed, in beautiful scenery they can hardly fail to occur; but, as concerns the actual laying out of the grounds, it is only certain definite points that can be subjects of study, and other results and combinations must be left more or less to accident.

In the foreground itself, as well as elsewhere, there must be variety; otherwise, whatever merit it may possess in itself, it would appear too *mannered*. Diversity of shape, of colour, of light and shade, must all be secured; and every advantage must be taken of inequalities of surface in the ground: gentle undulations and swells, abrupt breaks and hollows, may all be turned to account for this purpose. The larger features of landscape are not equally under our control: should nature have been niggardly to the site in this respect, we can do little towards counteracting her parsimony, save in the way of planting, imparting to the scene variety of verdure, and the richness of sylvan luxuriance. From the tangled thicket to the light open grove, between the interstices of whose foliage the sunbeams dart and flicker upon the rich grassy sward—from the plant and shrub, to the majestically spreading tree—all these may be formed; though, in regard to objects of the last-mentioned class, it must be confessed that they require more than the growth of a few summers for their development, nor, unless previously existing on the spot, can they very conspicuously adorn an entirely newly-formed place. On that very account are they all the more to be prized and cherished when we actually possess them, as ornaments of the scene not to be replaced by ourselves or our immediate successors when once destroyed. Independently of their nobleness as objects of sight, the aspect of venerable trees and woods exerts a powerful influence over the mind; there is a charm even in the very monotony of a dense and uninterrupted screen of wood, and, when viewed from an eminence, such an expanse of foliage and verdure partakes, like the ocean, of the sublime.

In conformity with the character of the scenery should be the character of the house, whether that be castle, Grecian edifice, manorial building, or cottage ornée. To scenery possessing an abrupt romantic character, and the site limited to a small extent, the castle is well adapted: its towers harmonize with the rocky steep. Gentle undulations, with sufficient extent for lawn and shrubberies, are best graced with a Grecian edifice, which courts variety and cheerfulness; while the manorial building loves to be tranquilly embosomed in the deeper shades of a woody and romantic scene. The cottage ornée and the forest-lodge may be appropriately placed amid picturesque and rural scenery.

In regard to the site of the house, it ought rarely to be placed on the highest point of the domain, particularly if that point is of considerable height. Nor should a house be placed parallel to a river or a valley. The best situation for a house is on a platform, with a rising ground behind it, and a depth below it, and the windows of the living rooms of every house in this cold climate should face the south. To preserve these entire, the entrance hall should be placed in some other quarter. Every house should be constructed so as to conform with the extent of the domain,—the immediate ground on which it is placed,—the scenery it commands,—the shelter requisite to comfort within it,—and the access to it. The manorial style can admit of much greater picturesque effect than any other, in conjunction with the offices, by giving greater extent and variety to the pile, than can be obtained in any of the square-like styles of architecture. Indeed, the irregularity in the manorial building is highly beneficial, both in the variety of the outline, and in the light and shadow resulting from it, the want of which is so obvious in the square flat surface of so many of our modern houses.

Though too much stress should not be imposed in forming a particular character for the approach, yet, it must be confessed, much enjoyment may be derived from it, as a drive or a walk through scenes which may not be accessible to the windows of the house. An approach, as Mr Gilpin truly says, should appear as an unstudied road to the house; and the scenery which it should command should depend on the nature of that seen from the residence. If there the view is extensive, the approach should wind through a humbler path; but should the house be confined among trees or rocks, then it should display all the variety and beauty of landscape which it is possible to obtain along its course. It should break off at a large angle from the public road, and avoid all curvilinear sweeps.

It may deviate from the course of its destination when any object of sufficient magnitude and importance appear to stand in its way. It may have inclination and declination in it, though these should never be purposely thrust in its way. Mere length is not a necessary character of a good approach; that character can only be derived from the kind of trees and shrubs with which it is embellished. These embellishments should be in unison with the scene. If a dreary space has to be passed over, an avenue of stately trees will divert the attention. If the country around is picturesque, natural groups of trees and shrubs, such as holly, thorn, furze, broom, will be most conformably placed along the approach. If romantic, then angular projections of rock, roots of trees, holding fast by rugged banks, large forest-trees scattered about in wild profusion; and ivy, fern, foxglove, and such plants, may adorn the skirts of the road. Whatever be the nature of the scene, exotic plants are quite misplaced near an extended approach. They can be tolerated only towards a cottage ornèe; a villa near a town, which is generally limited as to the extent of ground around it; or even towards a large domain, the ground around which is laid out as flower-gardens and shrubberies.

The character of the entrance-lodge has caused much discussion among landscape-gardeners and architects, without leading to any fixed principle. Mr Gilpin thinks lodges ought to be constructed in conformity to the nature of the scenery in which they are to be placed, rather than in regard to the architectural character of the house to which they belong; and the judicious examples which he adduces, as appropriate adaptation of lodges, support his views in a striking manner. Should the approach require a bridge, it should partake of the character of its situation. An architectural bridge should only be erected over a river of the larger dimensions; while a wooden one of simple construction, or arches of masonry surmounted with wooden rails for a parapet, will best suit to embrace a rivulet, or extend across a ravine. Whatever may be the structure of the bridge, it should be always horizontal, and have a light and airy appearance. On this account, rustic bridges are out of place, excepting in some remarkably umbratile and romantic spot, through which the road may wind between masses of rock and falls of water.

The adaptation of dress-ground around the house to the nature of the surrounding scenery, forms perhaps the most difficult department of the landscape-gardener. Had he to form a residence, with its accompaniments, on a bare piece of ground, it might be possible to cause all the component parts of the landscape to harmonise; but where there are existing old trees or buildings, which may have been originally disposed quite out of keeping to every thing around them, it is difficult, sometimes impossible, to apply the principles of harmony to them. And yet it would be barbarity to get quit of them "at one fell swoop." In such instances it is difficult

> "To lead with secret guile the prying sight
> To where component parts may best unite,
> And form one beauteous well connected whole,
> To charm the eye, and captivate the soul."

"Most places," says Mr Gilpin, "besides the features of the class to which they belong, have some peculiarities of their own, either as respects the general expression of the whole, or the circumstances of the parts, as the ground, the trees. The eye of taste will carefully observe these varieties, as on the due improvement of them at each place, rests, in a great measure, the variety of its own character, and its distinction from others of apparently similar features. Composition in landscape embraces three distinct parts, the *distance*, the *middle distance*, and the *foreground*. The first of these is out of our reach of improvement in itself, but will contribute more or less to the general effect of the scene, according to the treatment of those other parts which are under our control. And here it may not be improper to observe, that the very natural pleasure arising from extent of prospect has done much mischief, both in placing the residence, and in dictating its accompaniments. The indistinctness and variety of a distant view, no doubt, is highly interesting; but other and more important considerations should not be sacrificed to that alone. The middle distance may be within the reach of improvement, especially if the domain is extensive. If the middle ground consists of bold swellings, the plantations may be made to rise above the horizon, and break it where that is necessary. Should it be flat, the plantation should be so placed as to hide that flatness. But, of course, it is the foreground over which the greatest control can be exercised. Here the landscape gardener may exhibit his ingenuity to the highest degree; and here his knowledge of landscape-painting comes to his assistance with powerful effect.

Mr Gilpin regrets the total destruction of the grand and well defined foreground to the landscape as seen from the windows of the mansion,—the terrace; and asks what compensation we have received in exchange for it, in the bold, exposed, and windy gravelled roads which surround our modern residences. On the removal of trees in the foreground for scenic effect, he says, "it will be remembered that *removal*, in common with every measure connected with improvement, must rest mainly upon the local circumstances of the place and, consequently, will only admit of general suggestions, by which the proprietor may be awakened to the subject; so far at least as not to destroy the character of his place, by substituting the baldness of the modern system for the rich formality of the old school. The hand of taste will cautiously withdraw the veil which separates them, and by degrees, admit the surrounding scenery without destroying the shelter and partial seclusion so essential to the mansion we have been considering. Cheerfulness, rather than gaiety, should be the proposed result." And on the formation of the dress-ground, he remarks:—"The dress ground immediately connected with the house should be considered as the foreground of the picture, which the whole scene taken together presents to the eye, and should be treated as such. The groups and single trees upon it should be planted with reference to the scenery beyond, so as to lead the eye into the remote parts of the picture; excluding, as far as may be, whatever might injure the general effect."

Gravel-walks are necessary for the enjoyment of the scenery around. They must be formed according to the size and circumstances of the place. They should never be carried round the boundary of any particular spot, such as the dress-ground, the lawn, or a lake. The width of walks must be regulated by the use to which they are to be appropriated. Walks should break off at large angles from each other, and no two lines of them should be seen at the same time.

There is nothing more difficult in landscape-gardening than the production of a good effect by artificial water. Nature seems extremely jealous of being imitated in her liquid form. These imitations will be more or less natural, according to the nature of the ground which is to be appropriated to the use of water; so that, if a combination in form and extent of water be formed with the surrounding ground and trees, the highest finish will be given to the scenery of the park. Lakes, pools, and rivers, are the only forms which can be advantageously made use of. As with plantations so with lakes, the outline is the chief object of beauty; and if the indentations in the shores are rather bold and contrasting, than numerous, the effect will be much heightened. The points or headlands must be placed so as to be most effective, either from the windows of the house, or from some other more favoured spot for obtaining a view of the grounds. The point of greatest difficulty in the formation of a lake is its head, which being generally the deepest part of the water, and the water there being confined by a low embankment, islands or trees must be so arranged as to destroy the idea of an artificial termination. The shores and bays of a lake should *not run* parallel to the house, and the various promontories ought to be of different forms and heights, and, if possible, composed of different, but *harmonizing*, colour, of rocks or earth. Islands must not be placed in the centre, but so arranged and formed as if they had been detached from the *higher* banks of the lake, or deposited by the passage of a river through it; and even a peninsula properly formed, carrying an extremity of a large *plantation* into the lake, may have an imposing effect. Aquatic plants, such as the nymphæa, the reeds, the bulrush, and the flag, will produce a picturesque effect in an eddy, or conceal the termination of a low shore. A pool is just a small lake.

As to the mode of making the shores of the lake, Mr Gilpin says, "In the commencement of the operation, I should recommend (as in forming a plantation) the marking on paper the existing state of things, and adapting the situation, form, and circumstances of the water to be created, so as to produce an *harmonious whole;* infinitely more important than the size or even the beauty of the water, simply considered. The general form of he water being staked out, the digging should not e taken too close to the form given, but at different places should be more or less within it, so s to give an opportunity for the water to form its wn line against the bank. Parts also of the inended embankment might be left, as first broken own with the pick-axe, rather than be more determined by the spade. Upon the same principle, e earth should be so heaped upon the different illocks, as to allow room for it to fall irregularly owards the bottom, as nothing can be more unnaral than a hanging level, as the workmen term . Though the principal varieties of form will be tained, where the shallowness of the water imits but of the operation, yet in forming the ad, it is desirable to give some variety to its oute, instead of the straight line, or uniform curve, hich usually characterises it. One bold promonry, shooting into the water, would divide the length of the head, especially when it is of considerable extent. Great improvement also might, I conceive, be made in the construction of the head, by giving variety to its surface, instead of making it a dead level, as is usually the case. This variety of surface would, moreover, give opportunity for planting near the water, which cannot be safely done on the level surface, for fear of injuring the puddle bank."

Of the river, Mr Gilpin says, "the banks of the river, though not so boldly contrasted as in the wilder scene, will still admit of considerable variety in their decoration. The smooth grassy bank, sliding almost imperceptibly into the water, will be relieved by a jutting point, formed with the varieties of water plants, enriched, if circumstances will allow, with fragments of stone of different size and colour; groups of alder or willow will occasionally break the margin, or the pendant and massive foliage of the wych elm will throw its broad shadow across the retiring reach. These, and such like circumstances, are essential to the completion even of the happiest form that the artificial river can assume."

In interfering with the character of a natural brook, it should be well considered, before it is sacrificed for a piece of water, whether the latter can be so formed and decorated as to warrant the change.

LATHAM, JOHN, M.D., F. R. S., &c., an eminent ornithologist, was born at Eltham, in Kent, in 1740; followed the profession of a surgeon; and died at Winchester, in 1837. This venerable man devoted himself to his favourite science of ornithology, with undiminished interest, to the close of his long life, which was extended to his ninety-seventh year. His writings on ornithology were very voluminous, and are essential to every student; for, though his views are perhaps limited in some respects, compared to those of more modern authorities, he made important use of the labours of previous naturalists, and added many species to those formerly known. His great works are: "Index Ornithologicus," in two vols. 4to. 1790; and "A general History of Birds," in ten vols. 4to. 1821—1824.

LATIN LEXICOGRAPHY. The progress of Latin lexicography in modern Europe has not been rapid. The *Catholicon* of John of Genoa, the earliest printed work in this department, first appeared in 1460. It was published, as appears from its date, in the infancy of the typographical art; and is supposed on good authority to have proceeded from the press of Faust, who among the Germans is believed to have been the inventor of the art of printing. The name of Faust, however, does not appear in the volume. The author of this lexicon finished his work in 1286, and was probably aided in his labours by the use of the older vocabularies, particularly that of Papias, a Lombard, who flourished in the eleventh century, and also that of Ugo or Uguccio, an ecclesiastic of Pisa, and afterwards archbishop of Ferrara, who lived about a century later. The supposition of an earlier edition of the *Catholicon* than this of 1460, struck from carved blocks of wood, has not sufficient authority. This work was, without doubt, very imperfect, and appears to have been marked with no considerable erudition. The explanation of words relating to theology was somewhat better than that of others, as might be supposed from the profession of those employed in its composition. With all its defects, however, it was not wholly destitute of merit, and passed through several editions, both in Italy and France.

Omitting several names of less note, we would mention John Reuchlin or Capnio, a German, and Nicholas Perottus, archbishop of Siponto, as numbered among those who in the fifteenth century deserved well of Latin lexicography. But one of the most known of the early Latin dictionaries was that of Calepin. The author was a monk, and took his name from a small town called Calepio, in the territory of Venice as it then existed. Calepin made liberal use of the labours of his predecessors in the preparation of his work, but, as at first published in 1502, it was of no great value. Succeeding scholars corrected some of its errors, and supplied some of its defects, and numerous editions of this dictionary followed each other. Among those who laboured to improve the lexicon of Calepin, are found the names of Joh. Passeratius, Jac. Montanus, Lud. de la Cerda, Conrad. Gesner, and Budæus.

In the early part of the sixteenth century, this department of Latin literature received a valuable addition in the well-known *Lexicon Ciceronianum* of Nizolius. This work, as improved by its successive editors, especially by Facciolati, exhibits in a form easily accessible the great body of Ciceronian Latinity, and, though substantially incorporated into later dictionaries, is still of great use to the student. It was less, however, the object of Nizolius to define the meaning of words, than to furnish forms of expression, and a general phraseological storehouse. But the claims of lexicography were not wholly disregarded. The author arranged the phrases, which he had collected, under distinct heads, though not always with a just discrimination; and this Thesaurus was an important accession to Latin literature, considered merely as a dictionary.

Robert Stephens, who was so highly distinguished both as a scholar and a printer, first published his *Thesaurus Linguæ Latinæ* in 1531. This was a work of great labour and value. The author issued a second edition in 1536, and a third in 1543, with large improvements.

In the year 1571, was published at Leipsic the first edition of the *Thesaurus Linguæ Scholasticæ* of Basil Faber. This author, in the composition of his work, departed in a great measure from the track of his predecessors. It was not his aim to furnish a vocabulary of the Latin language, with a bare explication of the meaning of words, but to enter more largely, than had hitherto been done, into the regions of poetry and criticism, and to exhibit in addition an extensive view of idioms, peculiar constructions, and elegant phraseology. Hence his quotations from the Roman authors, both in prose and verse, are numerous and extended, and often selected with judgment and taste. Illustrations of mythology, geography, and history, constitute an important part of the work, and at the time of its appearance must have rendered it peculiarly valuable. The Thesaurus of Faber was improved by succeeding editors, and especially by Joh. Matt. Gesner, whose edition appeared at Leipsic in 1726.

Johannes de Garlandia, who flourished in the eleventh century, was the first Englishman who turned his attention to compiling a Latin dictionary, and his *Synonyma et Æquivoca* was first published at Cologne, in 1490, and soon after in London. About half a century after, Thomas Elyot published his *Bibliotheca*. Elyot was succeeded by numerous authors in the same department, among whom the most noted were Thomas Cooper, Francis and Thomas Holyoake, and Adam Littleton. This last-named lexicographer acquired the most reputation by his labours; and his work, especially as improved in the Latin dictionary published at Cambridge in 1693, has very considerable value. The editors of this last work, among other aids, had at their disposal a manuscript collection of authorities from Roman authors, in three volumes, folio, by John Milton.

In the year 1735, a corrected and enlarged edition of the dictionary of Robert Stephens was published in London. In preparing this work for the press, the editors aimed to combine with the Thesaurus of Stephens some of the peculiar excellences of Faber. Their efforts were in a good degree successful; and the publication of the London edition of Stephens brought this branch of lexicography to such a state, that, with the increased means of literary labour, and the new zeal which was manifest in every species of improvement, its subsequent more rapid advance towards perfection might be easily anticipated.

In the mean time, as the only Latin dictionary common in the English schools was that of Cole, which was full of errors and defects, proposals were made in 1714 to Mr Robert Ainsworth, who enjoyed a high reputation for his knowledge of the Latin language, to prepare a new dictionary, which should better answer the public demand. This he undertook; and after having laboured, with some interruptions, for more than twenty years, in 1736 he published his *Thesaurus Linguæ Latinæ Compendiarius*. The English-Latin Part was a great improvement on any thing of the kind which had preceded it. In the Second Part of the work, where the Latin precedes the English, the arrangement of the definitions was new. Each meaning was numbered, and the authorities, which were placed in a body after the English definitions, were numbered in the same manner for the ease of reference. This was thought an important improvement; but it may be justly questioned, whether the use of this disposition of the authorities is not rather apparent than real. The eye, perhaps, may pass more readily from one part of a definition to another, so far as the English is concerned; but if the authorities on which the definitions rest are to be consulted, a course almost always useful, and sometimes necessary to the student, there is an obvious source of embarrassment. And it will probably be found, likewise, that students, in consequence of this separation, often fail to consult the authorities as they ought, and to receive that advantage from them which they are designed to afford. This dictionary of Ainsworth was very favourably received; but with some excellences it had likewise its faults. Succeeding editors have somewhat improved it; but on comparing in various places the late London stereotype edition with that of 1736, the changes appear to be few. Some errors have been corrected, and some deficiencies supplied, but the work is essentially what it was at first.

In the year 1715, a new Latin Lexicon was begun at Padua, chiefly at the suggestion, and under the superintendence and advice of Jac. Facciolati the head of the university. Forcellini was advantageously known by his labours to the promotion of Latin literature, particularly by his edition of the *Lexicon Ciceronianum* of Nizolius. He was likewise distinguished as one of the best writers in the Latin language among the moderns. To execute this work, he employed Egidio Forcellini, who had been his pupil, and who appears to have been every way qualified for the undertaking to which he was invited. At first the views of these scholars extended no further than to an enlarged edition of Calepin. This they finished in about four years; but, in the course of the work, they had become so sensible of the inherent and irremediable faults of Calepin, that they determined to begin a Latin lexicon, in some respects, on a new plan, and which should be independent of all that had preceded it, in the selection of words, in the definitions, and the arrangement of the senses. To the accomplishment of this great literary project, Forcellini applied himself with uncommon assiduity, and in 1761 the lexicon was completed. It was first published in 1771, several years after the death of the author. The names of Facciolati and Forcellini are united in this work, but it ought in justice to be stated, that the principal merit of its execution belongs to the latter. Facciolati himself says in reference to it, "Vix ego in plerasque voces quippiam contuli præter consilium, in multas autem ne consilium quidem."

The plan of this dictionary was digested with great care and judgment. The ancient authors in the Latin language were classed according to several chronological periods; as the purity of their style is found to correspond, in a great measure, to the age in which they flourished. The first period, extending from the time of the earliest Latin writers to the death of Augustus, and constituting the golden age of Latin literature, furnishes the great body of authorities on which the explication of words is grounded; later authors being referred to, in general, only as they in some way illustrate the earlier class, or afford some new meaning. In this way the rank of words and idioms as to their purity, and, for the most part, as to their propriety and elegance, is easily settled. To illustrate this portion of the work in part, reference may be made to the word *ala, a wing.* Here the combinations "movere alas," and "quatere alas," are quoted from Virgil; but "explicare alas" is referred to Martial, and "expandere alas" to the elder Pliny. "Quatere alas" is found likewise in Pliny; but Virgil is properly named as authority for this expression, as being an earlier writer.

It may be here remarked, that it ought by no means to be concluded, because phrases, idioms, or words occur in writers of a late date, that they were not current in the best age of the language. It is clearly possible, that many of them might have been, and without doubt some of them were used in the lost works of Cicero, Sallust, Livy, and others of the same literary period. In a fragment of one of Cicero's orations, recovered by Mai, is the word *lenities*, which had before been placed in glossaries only. If the reading of this fragment is admitted to be genuine, *lenities* can no longer be considered a word of suspicious or base origin; and, from the manner in which it is employed, this word was manifestly in common and reputable use. In a fragment of Cicero's treatise "de Republicâ," first published by the same editor, is the word *convenicium*, which, at the time of the discovery of this fragment, had been long lost from the language. But the consideration stated above can have no influence on the composition of a dictionary, which must of necessity be constructed of materials actually existing.

The next important principle, settled by Forcellini in the composition of his Lexicon, respected the classification of meanings and their arrangement. This branch of the subject had been treated by preceding lexicographers with much less care than its importance demands. Very different meanings had often been confounded, and distinctions often introduced, where there was really no difference. The labours of the author here were attended with distinguished success. It would be perhaps too much to say, that he is never in error. The difficulties in the way of a clear and unobjectionable classification of meanings are in some cases nearly or quite insurmountable; but that he improved greatly on all who preceded him, is undeniable. In the arrangement of the meanings, that is placed first, which from the use of a word among authors of the first class, appears to have been the earliest, and from which there is the most ready and easy transition to other meanings; and these again are made to follow each other on the same principle. All parts of a definition, therefore, illustrate each other; and, from a comparison of the whole, the real force and import of a word can hardly be mistaken.

As to the definitions, very little is made to depend on an accumulation of synonyms, a method which often obscures rather than elucidates a signification. Definitions are given for the most part in descriptive language, so precise and definite, that, with the subjoined examples, the reader is satisfied, that he has every thing before him necessary to a full understanding of the case in question. Robert Stephens, in the first edition of his lexicon, defined the words in the French language. In the second and third editions, the French was excluded, and Latin was introduced. One reason for this change was to procure for his work a more general currency. Forcellini has given first the corresponding Italian word, then the Greek, and, after these, the full definition in Latin. Care is likewise taken, in the selection of authorities, that the different constructions of a word with others should be exhibited, so far as such constructions affect the sense.

The metaphorical senses are also distinguished from the literal. Names of the gods in ancient mythology, names of persons current in the history of the fabulous and heroic ages, and names of places, rivers, mountains, and whatever else relates to the same early period, are inserted with the proper references to the authors from whom the information is derived. Besides the classes of words already mentioned, others of no authority, or for the most part barbarous, are thrown into an appendix. Such is the general plan of the Latin Lexicon of Facciolati and Forcellini, which hardly admits of improvement; and the execution in every part shows extensive learning, great accuracy, diligence, and sound judgment. That, in a work so extensive, every part should be executed with equal success, is not to be expected. The most, however, that succeeding editors have accomplished, is to supply a few omissions; and this lexicon deserves to be reckoned among the most perfect works of the kind which have ever been composed.

While this dictionary of Forcellini was in progress, a new Latin lexicon was undertaken in Germany, by John Matth. Gesner. His scheme was, to make the London edition of Stephens the basis of his work. In making improvements in this, he professes to have removed many excrescences, to have corrected numerous errors, and to have made large additions. This lexicon was published in 1749, and was a most valuable contribution to lexicography. Not being an independent work, as the author chose to make few alterations in the plan of Stephens, it has less uniformity of execution than the Lexicon of Forcellini. The different senses of a word are not always philosophically arranged; and authorities are sometimes furnished in disproportionate numbers. The definitions are in Latin, and generally clear and full. As a storehouse of the varieties of Latin phraseology, the Thesaurus of Gesner is of the highest value to the student of Latin literature.

A work was still wanting in this department, of a more popular character; and accordingly, in 1783, J. Im. G. Scheller published his copious German-Latin and Latin-German Lexicon, which, as a universal dictionary of the Latin language for the use of students generally, has some advantages over Gesner. The arrangement of words is throughout alphabetical. In the Thesaurus of Gesner, the order of derivation is observed. The definitions are in the German language, and the authorities are selected with admirable judgment, both for confirming the significations assigned to the words, and illustrating the varieties of grammatical construction. Many of these passages are translated, especially where any difficulty can be supposed to exist. To the arrangement of the different meanings of words, Scheller has paid unusual attention, and the whole work is digested throughout on a uniform plan. This Lexicon was received in Germany with great approbation. Two editions of it were published by the author; the third, which appeared in 1804, soon after the death of Scheller, had been revised by him. No stronger proof is needed of its excellence, than the fact, that for more than half a century, as a Thesaurus, it has not been superseded in Germany. An abridgment of it has long been used in schools, and a valuable manual Latin lexicon, chiefly derived from Scheller, has been published by Luenemann. An English translation of Scheller has been lately printed at Oxford; but, so far as we have had opportunity to examine it, we have not formed a high opinion of its merits.

In the year 1799, an edition of Scheller was published in Holland, which had been prepared under the direction of Rhunken. Scheller, in the same manner as Gesner and Forcellini, made his work a general lexicon of the language. The Leyden edition, by the advice of Rhunken, was limited to the proper classic authors, or such as have some reputation for purity in the choice of words. The reasons assigned for this course are not altogether satisfactory. Words used by authors of little note actually occur, and the student needs some explication of them. At least it may be useful to know on what authority such words rest; and, if the writer who has first used them is named and characterised, as is done by Forcellini, there is little danger, that a dictionary so constructed will give currency to barbarisms.

LAUDERDALE, James, Earl of, a distinguished public character, was born at Hatton, in the county of Edinburgh, on the 24th Jan. 1759. He was early placed under the superintendence of the learned Andrew Dalzel, LL.D. afterwards professor of Greek in the university of Edinburgh; he also studied at the college of Edinburgh, and at Glasgow, where he attended the juridical lectures of professor Millar, and he completed his education at Paris. Returning home, his lordship was admitted a member of the faculty of advocates. [illegible] was chosen member of parliament for Newport, in Cornwall, at the general election, same year; and for Malmesbury, 1784; rendering himself conspicuous in the House of Commons by his opposition to lord North's administration, and attaching himself to Mr Fox, the friendship of whom his lordship considered as the honour of his private life, and a steady adherence to his political principles as the sole merit of his public character.* He was an energetic supporter of Mr Fox's India bill, and one of the managers of Hastings's impeachment. Succeeding his father, 1789, his seat in the House of Commons became vacated; but, at the general election, 1790, he was chosen one of the sixteen representatives of the Scottish peerage, and followed the same line of conduct in the House of Lords, taking a frequent share in the debates. The state of his lordship's health rendering a few months' residence in a mild climate expedient, he left England in August 1792, accompanied by Dr Moore, who published a "Journal during a residence in France from the beginning of August to the middle of December 1792."

His lordship, in 1794, published his "Letters to the Peers of Scotland;" and 2nd June [illegible], moved an address to the king for peace, which was negatived by the House of Lords. The same year he warmly exerted himself in opposition to the Habeas Corpus suspension act, the sedition bills, and other measures of administration. His lordship published in 1796, the "Substance of a Speech in the House of Peers on the National Finances;" in [illegible], "Thoughts on Finance, suggested by the Measures of the present Session;" in 1798, "Letter on the present Measures of Finance, in which the bill now pending in parliament (for tripling the Assessed Taxes), is particularly considered;" in [illegible], his elaborate work, "An Enquiry into the Nature and Origin of Public Wealth, and into the Means and Causes of its Increase," (2nd edit. [illegible]); and in the same year, "Observations on the Review of his Enquiry into the Nature and Origin of Public Wealth, published in the eighth number of the Edinburgh Review;" and in 1805, "Thoughts on the alarming State of the Circulation, and the means of redressing pecuniary Grievances in Ireland:" and, "Hints to the Manufacturers of Great Britain on the consequences of the Irish Union, and the System since pursued, of borrowing in England for the service of Ireland."

On the dissolution of the Pitt administration, 1806, the Earl of Lauderdale was created a peer of the United Kingdom of Great Britain and Ireland, 15th February, 1806, by the title of baron Lauderdale, of Thirlestane castle, in the county of Berwick, was sworn a privy councillor, and had the Great Seal of Scotland delivered to him, [illegible] 1806. On the change of administration, [illegible] of Gordon was re-appointed keeper of the Great Seal of Scotland, 11th April 1807. The Earl of Lauderdale now having an hereditary seat in the House of Lords, exerted himself actively in parliament, and published in 1809, "An Inquiry into the Practical Merits of the Present System for the Government of India under the superintendence of the Board of Control;" "Further Consideration of the State of the Currency; in which the means of restoring our Circulation to a salutary state are fully explained, and the injuries sustained by the public treasury, as well as by the National Creditor, from our Present Pecuniary System, are minutely detailed, 1812, 1814;" "Letter on the Corn Laws, 1814." The pamphlets from his lordship's pen had considerable weight attached to them at the time that bullion and other questions occupied the public attention. In politics, lord Lauderdale's opinions were, for that period, considered to be extreme; and his appearance in the House of Lords in the rough costume of Jacobinism made quite a sensation when the principles of the French Revolution were in vogue with the democratic party in this country. For the last ten years of his life his lordship lived in retirement, devoted to agricultural pursuits. His death took place at Thirlstane castle in Berwickshire, on the 13th Sept. 1839, at the age of eighty years. The earl of Lauderdale married, on the 15th of August, 1782, Eleanor, only daughter and heiress of Anthony Todd, Esq. secretary to the general post office; and by that lady, he had four sons and five daughters. At Dunbar every demonstration of the deepest sorrow was manifest at the loss the inhabitants had sustained by the death of so good and considerate a landlord. A bust of the Earl of Lauderdale, by Nollekens, was exhibited at Somerset house in 1804.

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* It is a singular coincidence, that Mr Fox and lord Lauderdale, two of the most intimate friends that ever lived, were born on the same day (24th January) and died on the [illegible] (13th September). Mr Fox was ten years older than lord Lauderdale, and lord Lauderdale survived Mr Fox [illegible] years.

LAUNCESTON; a town in the county of Cornwall, situated about 210 miles W.S.W. from London, and eighty-four from the Land's End. The county assizes, which used to be held at this town, are now held at Bodmin, in consequence of the situation of the county jail there, and the completion of new courts at the latter place in 1838. Before the Reform Act, Launceston returned two members to parliament, but it now joins with Newport in returning one. Population in 1831, 2231.

The *Castle of Launceston* is, perhaps, one of the oldest in England, and appears to have been in a very ruinous state, even as far back as 1337. An official survey at that time, describes "A hall with two chambers; a smaller hall called the Earl's chamber, with another chamber, and a small chapel adjoining; a larger chapel, another small hall, a few other rooms, and two prisons: there were two rooms, also, in the tower or the keep, but much out of repair." In 1602, the ruins consisted of "a decayed chapel in the base court, a large hall for holding the shire assizes, the constable's dwelling-house, and the common gaol." In 1650, only one old tower remained in tolerable preservation, which was used as a prison. There are now scarcely any remains of the castle, except the keep, which has been described by Leland, as "the strongest, though not the biggest, he had ever seen in England." From the massive nature of the building, and the entire absence of Saxon ornament, it is supposed to have been built by the ancient Britons.

LAW, COURTS OF, in England. The members of the profession of the law in England, as in most European countries, are formed into different and distinct classes, each of which performs a distinct part of the labours of the profession. And for each of these classes a different course of study and education is requisite. In the courts of common law all the subordinate labours of the profession are performed by persons who are denominated attorneys. The attorney acts as a sort of agent of the party, in conducting his law business, and holds all the correspondence with him. He is a middle man between the barrister and the client. He obtains advice for him in cases of doubt, or difficulty, draws contracts and instruments for him in ordinary cases, and causes instruments of conveyance and other instruments, to be drawn for him by conveyancers in difficult cases, and attends the execution of them. He makes his client's demands upon debtors; commences his suits when plaintiff, and enters an appearance for him when defendant; watches the progress of his suits or cases, attends the prosecution or defence of them to final judgment; obtains advice respecting the proceedings when necessary, in every stage of their progress; gives the requisite notices; procures the pleadings to be drawn and motions to be made; collects, arranges and prepares the evidence for the trial; and employs barristers to argue the case to the jury, and when necessary, to the court. His office is highly respectable and often lucrative, but in rank and dignity far below that of the barrister. Labours of a similar kind in the courts of equity are performed by persons denominated solicitors. Formerly, the offices of attorney and solicitor were entirely distinct, but in later times they have been usually discharged by the same person, who is admitted to practice both as attorney and solicitor. The attorney and solicitor in the courts of common law and equity, answer to the proctor in the ecclesiastical courts and courts of admiralty, by whom similar labours are performed in those courts.

When it becomes necessary to address the court, to make a motion, or argue upon a question of law or fact in the cause, to the court or jury, if it be in the courts of common law, a barrister or sergeant at law must necessarily be employed for that purpose, and if it be in the ecclesiastical courts or courts of admiralty, an advocate at Doctor's Commons must be employed, who alone are allowed to perform such offices in these courts. The practice of certain of the barristers is generally limited to the courts of common law. Others practise wholly or principally in the courts of equity. Of those who generally practise in the common law courts, some usually attend the courts of common pleas and exchequer, others more commonly appear in the court of king's bench, and many, perhaps rather from necessity than from choice, are most frequently seen in attendance at the criminal courts at the Old Bailey and the courts of quarter sessions. Of those who practise chiefly in the courts of equity, some attend usually before the lord chancellor, others before the vice chancellor, others before the master of the rolls, and many before the court of bankruptcy and the insolvent debtor's court. Barristers who practise in the courts of common law, as well as those who practise in the courts of equity, and the advocates at Doctors Commons, argue cases on appeals before the House of Lords. Many barristers too, are in the practise of appearing before committees of the House of Commons, and occasionally in some of the city and county courts, and before the judges at their chambers as well as before the sheriff's jury. And a limited number of the younger barristers commence their professional career in the court of Marshalsea and Palace Court. But in matters before the judges at chambers in ordinary cases, and in the sheriff's court, and before the commissioners of bankruptcy, and the court of requests and in some other of the subordinate courts, the attorneys are allowed to and usually do perform the duties, which are alone performed by barristers in the higher courts. Barristers practising in the courts of common law and advocates at Doctors Commons, are occasionally employed before the chancellor, in arguing questions relating to the particular branches of law, with which they are, from their course of practice, respectively most familiar. Some barristers rarely if ever appear in court, being employed chiefly as special pleaders, or equity draftsmen, in preparing the written pleadings of the litigant parties, or as conveyancers, or chamber counsel.

The right of practising pleading and audiences in the court of common pleas was formerly exercised exclusively by persons holding the highest rank in the profession, and of the degree of the coif or sergeants at law; but by a recent royal warrant barristers have now an equal right and privilege to practise in that court; and the precedence is conferred on the sergeants of law already created. Future sergeants, if any should be created, will take rank next after the king's counsel, or those who have patents of precedence. King's counsel have precedence, according to the dates of their appointment. They answer in one respect to the *advocati fisci* of the Romans, as they cannot, without a licence, be employed against the crown. And barristers having patents of precedence, rank according to the dates of those patents, and those having no patents of precedence, have precedence after the king's counsel, sergeants at law, the queen's attorney, and solicitor general, and the recorder of London, according to the dates of their call to the bar. Barristers, advocates and sergeants never, on any occasion, have any interviews whatever with their clients. They confer only with the attorney, solicitor, or proctor. No action can be maintained by them for their fees, which are regarded as *quiddam honorarium*. They are employed not for the cause, but for the occasion only; and have no concern with the cause, or the fate of it, beyond the particular occasion for which their services have been engaged. It often happens that the opinion of one or more barristers is obtained respecting the legality of the demand or defence, that another is employed to make the declaration, or draw the answer or plea, that a third is employed to make a motion, that a fourth is employed to argue the case to the jury, and a fifth to argue some question of law or equity to the court. The brief, containing an abstract of so much of the case as is important for the occasion, with the fees, is delivered by the attorney at the time of the retainer. England, for the purpose of trials at *nisi prius* is divided into several circuits; two judges attend on each circuit. A certain number of barristers also attend the courts on the different circuits to argue causes at the *nisi prius* sittings before the court and jury. And it is a rule well understood and observed, that no barrister can go on more than one circuit unless upon a special retainer. When commencing practice he may go on a particular circuit once or twice to try his luck, and then change that circuit for another. But after this trial, he is not permitted to change his circuit during his practice. After being appointed the king's attorney or solicitor general, he is obliged to give up his practice on the circuit entirely, excepting in cases where he shall have a special retainer. On the circuit the barristers mess together, and none but those who are of the degree of barrister are admitted to the table. The judges, we believe, lodge at a house provided for them exclusively by the county. Judges in all cases in the common law courts, are selected from the sergeants at law, and cannot return to practise at the bar, after having taken a seat upon the bench. The judges, sergeants, barristers and advocates when in court, wear, by way of distinction, a particular dress. The sergeants, barristers and advocates wear wigs, bands and gowns; and none are allowed to appear in court without these badges of distinction. His majesty's attorney and solicitor general, the sergeants, and king's counsel, and all above the rank of an ordinary barrister, have silk gowns. The sergeants have nothing in their dress to distinguish them from the king's counsel, excepting a black patch of silk on the top of the wig. The judges wear full bottomed wigs and robes of different colours on different days, in term time, and wigs much like those of the sergeants at the sittings at *nisi prius*. Full bottomed wigs are also worn by the barristers, when they appear before the House of Lords. The attorneys, solicitors and proctors, have nothing in their dress to distinguish them from other gentlemen.

In regard to the education requisite to entitle them to practise, that of the attorney and solicitor differs widely from that of the barrister, as that of the proctor does also from that of the advocate. The attorney and solicitor are required to serve a clerkship *bona fide*, under articles of agreement. This service must be during five years, if the candidate have not obtained the honour of bachelor of arts or bachelor of laws, in the universities of Oxford, Cambridge or Dublin, but otherwise, three years' service will be sufficient, if it be within [illegible] years of receiving his degree. The whole of the time must be spent in the office of a practising attorney, excepting the last year, which may be spent with a practising barrister, special pleader or conveyancer. The candidate is obliged to give one term's notice of his intended application for admission, and to make affidavit of his service during the time required. Before being sworn and admitted, he is liable to be examined as to his ability and capacity by the judge, to whom he makes application, but this is usually dispensed with unless there be opposition. He takes an oath that he will truly and honestly demean himself as an attorney, according to the best of his knowledge and ability; and his name is then enrolled among the attorneys. An attorney who has been duly admitted, and enrolled in any of the courts of law at Westminster, may be admitted as a solicitor in any of the courts of equity. And on the other hand a solicitor may be admitted as an attorney in the courts of common law. Attorneys who act as agents of unqualified persons, or permit such persons to use their names, or are guilty of any gross misconduct, are liable to be struck off from the roll and debarred from practising. And any unqualified person, who shall act as an attorney, is liable to imprisonment not exceeding one year.

As to the education and qualifications [illegible] in order to be called to the degree of barrister, we cannot state them more concisely than by adopting the language of the common law commissioners.

"The four Inns of Courts,—the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn, —severally enjoy the privilege of conferring the rank of barrister at law; a rank which constitutes an indispensable qualification for practice in the superior courts. No other means of obtaining that rank exist, but that of becoming enrolled as a student, in one or other of these inns, and afterward applying to its principal officers or benchers, for a call to the bar. The origin of this privilege of the inns of court appears to be involved in considerable obscurity.

"It was observed by lord Mansfield, in the case of The King v. Gray's Inn, Doug. 354, that the original institution of the inns of court no where precisely appears; but it is certain that they are not corporations, and have no charter from the crown. They are voluntary societies, which for ges have submitted to government, analogous to that of other seminaries of learning; but all the power they have concerning the admission to the bar, is delegated to them from the judges; and in very instance their conduct is subject to the control of the judges as visitors.

"In support of these positions, various passages re cited from Dugdale's Origines Juridicales, which clearly show that, in former times, the udges and the benchers made regulations to be oberved by the inns of courts, not only respecting he admission to the bar, but generally regarding he conduct of the members of the inn, and the dmission of students. Many instances will be und in the appendix, of such orders, sometimes ade by advice of the privy council and judges nly, and sometimes by the benchers, by advice d direction of the judges, and proceeding from e king's suggestion.

"There does not appear to be an instance in morn times in which the judges have interfered ith the internal regulations of the different soeties, though there are several in which they ve acted as visitors, upon appeals to them from cisions of the benchers respecting calls to the r.

"In the case of Mr Wooler, reported as the e of The King v. The Benchers of Lincoln's n, 4 B. & C. 855, it was held that the judges d no power, as visitors, to interfere with the relations of the inns of courts respecting the adsion of students; and also that the court of g's bench could not, in such case, interfere by ndamus. It was observed by Mr Justice Littlee, "that the court was called upon to control society in the admission of their members; but t, as far as the admission of members is conned, those are voluntary societies, not submitg to any government. They may in their distion admit or not, as they please; and the court king's bench has no power to compel them to ait any individual." He added, that "the inference of the judges at the instance of those nbers of the societies whom the benchers had sed to call to the bar, was perfectly right; bese a member, who had been suffered to incur ense, with a view to being called to the bar, reby acquires an inchoate right to be called; if the benchers refuse to call him, they ought ssign a reason for so doing; and if there be no on, or an insufficient one, then the member who has acquired such inchoate right is entitled to have that right perfected.

"With respect to the regulations and practice now in force in the different inns of courts, relative to the subjects referred to us under the present inquiry, we find them to be as follows.

"1st. As to the admission of students.

"The following rules appear to have been adopted by all the four societies.

"Before any person can be admitted a member, he must furnish a statement in writing, describing his age, residence, and condition in life, and comprising a certificate of his respectability and fitness to be admitted, which must be signed by the party, and a bencher of the society, or two barristers.

"No person is admitted without the approbation of a bencher, or of the benchers in council assembled.

"The applications must, before he can enter into commons, (and in some societies on admission,) sign a bond with surety conditioned to pay the dues. Every person applying to be admitted a member of any of the Inns must sign a declaration that he is desirous of being admitted for the purpose of being called to the bar, and it is required by all the societies that he shall not, without the special permission of the society, take out any certificate as a special pleader, conveyancer, &c. under 44 G. III. 98, and such permission is not granted until the applicant has kept such commons as are necessary to qualify him to be called to the bar, and it is given for one year only at a time.

"Besides these regulations, we are informed, that at the Inner Temple, and at Gray's Inn, no person is admissible while engaged in trade. It has also been a rule at the Inner Temple, since the year 1829, that no person shall be admitted without a previous examination, by a barrister appointed by the bench for that purpose, in classical attainments and the general subject of a liberal education. Such examination is to include the Greek and Latin languages, or one of them, and such subjects of history and general literature as the examiners may think suited to the age of the applicant.

"2d. As to the call to the bar.

"The following regulations appear to be in force in all the societies. No person in priest's or deacon's orders can be called to the bar. No person can be called to the bar while he is on the roll of attorneys, solicitors, or proctors. Before a person can be called to the bar, he must keep commons for three years, that is, twelve terms, by dining in the hall at least three times in each term. He must have been a member of the Inn for five years, unless he has taken the degree of master of arts, or bachelor of law, at the universities of Oxford, Cambridge, or Dublin, or at Lincoln's Inn, is a member of the faculty of advocates in Scotland, in which case he may be called after he has been a member of the Inn for three years; but this exception does not extend to honorary degrees.

"A student, previously to his keeping any of the terms requisite for his call, must deposit with the treasurer of the society one hundred pounds, to be returned without interest, on his being called to the bar; or in case of death, to his personal representatives; but this rule does not apply to any person who shall produce a certificate of his having kept two years terms in any of the universities of Oxford, Cambridge, or Dublin, or at Lincoln's Inn, of his being a member of the faculty of advocates in Scotland. No person can be called to the bar until he is twenty-one years of age. The call to the bar is by an act of the benchers in council or parliament, &c. assembled. The name and description of every candidate for being called to the bar must be hung up in the hall a fortnight before he is to be called; any person applying to be called to the bar must make application to a master of the bench to move for the same. And the list of applicants to be called to the bar at any society, is always transmitted, before the call takes place, to the other societies.

"At the Inner Temple, Middle Temple and Lincoln's Inn, no attorney, solicitor, or proctor, can be admitted to commons for the purpose of being called to the bar, until his name shall have been struck off the roll.

"In Lincoln's Inn, a person wishing to be called to the bar must read his exercise at the bar table, and the barristers at that table have a power of rejection, subject to an appeal to the benchers. If not rejected by the bar table, it is still necessary that he should be approved by the bench.

"At Lincoln's Inn, it is a rule that no person in trade is permitted to do exercises, to enable him to be called to the bar; and there is the same prohibition as to any person who has been in the situation of clerk to a barrister, conveyancer, special pleader, or chancery draftsman, and has done the offices and received the perquisites of such clerk.

"3d. As to the case of rejection upon an application to be admitted student, or to be called to the bar.

"The general state of practice in all the societies appears to be as follows:

"If a person be refused admission as a student by any of the societies, he has no means, either by appeal to the judges or otherwise, of bringing under revision the propriety of the rejection; (so decided in the case of The King v. Lincoln's Inn, before referred to, which is in accordance with the state of the practice); and a certificate of the rejection is transmitted to all the other societies.

"When any of the societies refuse to call a person to the bar, the benchers will hear him personally or by counsel, and allow him to give evidence to rebut the charges made against him; and if he be dissatisfied with their decision, he may appeal to the judges. On such appeal, the benchers send to the judges a certificate stating the reasons of their refusal to call such person to the bar."

The education of those who intend to practise in the ecclesiastical courts and courts of admiralty, is quite different from that requisite for the attorney, solicitor or barrister.

In order to entitle a person to be admitted as a proctor, it is required that he shall have served a clerkship of seven years under articles with one of the senior proctors, who must be at least of five years standing. And before he is permitted to be articled he must produce a certificate of his having made reasonable progress in classical education. When the term of seven years is completed, the party is admitted a notary by a faculty from the archbishop of Canterbury. A petition is then presented to his Grace, signed by three advocates and three proctors, that the party applying to be admitted has served as articled clerk to a proctor of the court for the full term of seven years. If this certificate be approved, the archbishop issues his *Fiat;* and a commission is directed to the dean of the arches, by whom the party is admitted under the title of a supernumerary with ceremonies similar to those observed on the admission of an advocate.

No person can be admitted to practise as an advocate in the courts of admiralty or ecclesiastical courts, who has not taken the degree of doctor of laws at one of the English universities. This we believe requires at least three years study of the civil and canon law. A candidate for admission as an advocate is required to deliver into the office of the vicar general of the province of Canterbury a certificate of his having taken the degree of doctor of laws, signed by the registrar of the university to which he belongs. A petition, praying that, in consideration of such qualifications the candidate may be admitted, is presented to the archbishop, who sends his *Fiat* for the admission of the applicant directed to the vicar general, who thereupon causes a rescript or commission to be prepared, and addressed to the dean of the arches, empowering and requiring him to admit the candidate as an advocate of that court. To this a proviso is always added that the person to be admitted shall not practise for one whole year from the date of the commission, in order that by attending during that interval he may acquire a competent knowledge of the forms of proceeding in these courts. The candidate is introduced by two advocates, and presented to the dean of the arches, who, after the archbishop's rescript is read and the candidate has taken the oaths, admits him as an advocate of the court. The advocate is afterwards admitted in a similar manner in the court of admiralty.

Having spoken of the Inns of Court and of Doctors' Commons, it may perhaps, as a matter of curiosity, be interesting to our readers to give a succinct account of them. The buildings called Doctors' Commons are near St Paul's cathedral. The ecclesiastical laws, as now existing, have been for upwards of three centuries administered in the principal courts, by the body of men before referred to, as a distinct profession for the [illegible] the civil and canon laws; some of the [illegible] which body, in the year 1567, purchased the [illegible] on which Doctors' Commons now stands, for the residence of the judges and advocates, and [illegible] buildings for holding the ecclesiastical and [illegible] alty courts, where they have ever since [illegible] to be held. In the year 1768, a royal [illegible] obtained, by virtue of which the then [illegible] the society and their successors were [illegible] under the name and title of "The College [illegible] Doctors of Law exercent in the Ecclesiastical [illegible] Admiralty Courts." This college [illegible] president (the dean of the arches for the [illegible] being) and those doctors of law, who, having [illegible] larly taken that degree in either of the [illegible] of Oxford or Cambridge, and having been [illegible] advocates in pursuance of the rescript of the [illegible] bishop of Canterbury, shall have been [illegible] lows of the colleges in the manner provided [illegible] the charter. The judges, advocates and [illegible] have their offices of business and places of [illegible] dence at Doctors' Commons.

As to the Inns of Court, they are of so [illegible] great antiquity that their origin is now [illegible] some doubt. It has been generally supposed [illegible] they originated in a struggle between the [illegible] governed by and cultivating the study of the [illegible] and canon law, and the nobility, gentry, [illegible] anxious to maintain and cultivate the [illegible] the English common law. When the [illegible] common pleas, the only court at that time having jurisdiction in civil cases, was, by *Magna Charta*, established permanently at Westminster, it is supposed, that many lawyers theretofore dispersed in various parts of the country, began to have fixed residences near this court; and that about this time the professors of the common law being excluded from the universities, for the purpose of establishing the study of the common law without the aid of the church, formed themselves into voluntary societies and a collegiate order, and established a sort of university of their own, which at different times was favoured with the countenance and support of the crown.

There are, at present, four Inns of Court, the names of which have before been mentioned; and several Inns of Chancery, belonging respectively to these Inns of Court. The former are occupied by barristers and students, and the latter by attorneys, solicitors and their clerks. Fortescue, speaking of these Inns in his time, says that the laws of England being learned and practised in three different languages, namely, English, Norman French, and Latin, could not be so well studied in the universities where Latin was mostly in use; but were studied in a public manner and place, much more commodious and proper for the purpose, than in any university; that the situation of the place was between London and Westminster, and not in the heart of the city itself, where the great confluence and multitude of the inhabitants might disturb them in their studies, but in a private place, separate and distinct by itself in the suburbs, nearer to the courts of justice, that the students, at their leisure, might daily and duly attend with the greatest ease and convenience. The Inns of Court, although they remain in the same place as in the days of Fortescue, are now in the midst of the business and bustle of the town. Fortescue says, that the students in the Inns of Chancery, of which Inns there were ten or more in his time, were young men, who studied there the first principles of the law; and that after having made some progress there, and being more advanced in years, they were admitted into the Inns of Court. In these greater Inns, he says a student could not well be maintained under eighty scuta, (a very large sum in those days), and if he had a servant to wait upon him, as for the most part they had, the expense was proportionably more, and that for that reason, the students were sons of persons of quality; those of an inferior rank not being able to bear the expense of maintaining and educating their children in that way. And as to the merchants, he says they seldom cared to lessen their stock in trade by being at such large yearly expenses. So that there was scarcely to be found throughout the kingdom, an eminent lawyer, who was not a gentleman by birth and fortune, and consequently, they had a greater regard for their character and honour than those who were bred in another way. There was in the Inns of Court and Inns of Chancery, a sort of academy or gymnasium, fit for persons of their station, where they learned singing and all kinds of music, dancing and such other accomplishments and diversions, as were suitable to their quality and usually practised at court. At other times, out of term, the greater part applied themselves to the study of the law. Upon festival days, and after the offices of the church were over, they employed themselves in the study of sacred and profane history. There, says our author, every thing good and virtuous was to be learned, and all vice was discouraged and banished; so that knights, barons and the greatest nobility of the kingdom, often placed their children in those Inns of Court, not so much to make the law their study, much less to live by the profession, (having large patrimonies of their own,) as to form their manners and to preserve them from the contagion of vice.

These Inns for a long time after the days of Fortescue bore a very strong resemblance to universities. They conferred their degrees of apprentice, or barrister and sergeant at law, answering to the degrees of bachelor and doctor of law conferred in the universities. There were lectures or readings which the students attended. Prayers were daily read in the chapels belonging to the Inns. Questions were daily mooted. The students constantly lodged there, and dined and supped in the halls of the Inns in vacation, as well as in term time. The Inns were impaled and the gates were closed at a certain hour in the evening, and opened at a certain hour in the morning, in like manner as at the universities. Each Inn had rules and regulations regarding the conduct of the students much like those at the universities. And the members were accountable to the heads of their Inns for their conduct, with as much strictness as the students at Oxford or Cambridge are now.

Lord Coke says, speaking in reference to his time, "As there be in the universities of Cambridge and Oxford divers degrees of general sophisters, bachelors, masters, doctors, of whom be chosen men for eminent and judicial places both in the church and ecclesiastical courts, so in the profession of the law, there are mootmen, which are those that argue readers' cases in Houses of Chancery, both in terms and grand vacation. Of mootmen, after eight years study or thereabouts are chosen utterbarristers. Of these are chosen readers in Inns of Chancery. Of utterbarristers, after they have been of that degree twelve years at least are chosen benchers or ancients; of which one that is of the puisne sort reads yearly in the summer vacation, and is called a single reader, and one of the ancients that had formerly read, reads in Lent vacation, and is called a double reader, and commonly it is between his first and second reading, about nine or ten years. And out of these the king makes choice of his attorney and solicitor general, his attorney of the court of wards and liveries, and attorney of the duchy, and of these readers are sergeants elected by the king, and are by the king's court called *ad statum et gradum servientis ad legem*; and out of these the king electeth one or two or three as please him, to be his sergeants, which are called king's sergeants. Of sergeants are by the king also constituted the honourable and reverend judges and sages of the law. For the young student, which most commonly cometh from one of the universities for his entrance or beginning, were first instituted and erected eight houses of Chancery to learn there the elements of the law, that is to say, Clifford's Inn, Lyon's Inn, Clement's Inn, Barnard's Inn, Staple's Inn, Furnival's Inn, Thavie's Inn, and New Inn, and each of these houses consist of forty or thereabouts. For the readers, utterbarristers, mootmen, and inferior students, are four famous and renowned colleges, or houses of court, called the Inner Temple, to which the first three houses of chancery appertain, Gray's Inn, to which the next two belong, Lincoln's Inn, which enjoyeth the last two but one, the Middle Temple which hath only the last. Each of the houses of Court consists of readers above twenty, of utterbarristers about thrice so many, of young gentlemen about the number of eight or nine score, who there spend their time in study of law, and in commendable exercises fit for gentlemen. The judges of the law and sergeants being commonly above the number of twenty, are equally distinguished into two higher and more eminent houses called Sergeant's Inn. All these are not far distant from one another, and altogether do make the most famous university for profession of law only that is in the world, and advanceth itself above all others, *quantum inter viberna cupressus.*"

It would seem, notwithstanding the magniloquence of lord Coke, that the study of the law in these Inns had, even in his time, in some degree degenerated since the days of Fortescue. Two of the Inns of Chancery certainly, if no more, had become extinct, and in each of those remaining there were only about forty students, whereas, in Fortescue's time there were in each at least one hundred. And in comparing the ancient lectures or readings, with those in his day, lord Coke in another place says, "now readings having lost their former qualities, have lost also their former authorities; for now the cases are long, obscure and intricate, full of new conceits like rather to riddles than lectures, which, when they are opened, vanish away like smoke, and the readers are like lapwings who seem to be nearer their nests when they are farthest from them." The diminution of the number of students may probably have been occasioned by the circumstance that the sons of the nobility, not particularly destined for the profession of the law, did not resort there in so great numbers as formerly for the purpose of completing their education. The Inns were still, however, even at this time, the residence of some of the sons of the nobility, and men of family and fortune; and being intended, as the order of the readers and benchers declares, "chiefly for the profession of the law, and in a second degree for the education of the sons and youth of riper years of the nobility and gentry of the realm," it is but reasonable to suppose that lighter and more attractive studies and pursuits, and "commendable exercises fit for gentlemen," as lord Coke denominates them, often took the place of the dry and less inviting learning of the law. Sir Christopher Hatton first gained the favour of royalty by appearing in a mask made by lawyers; even Saunders excelled on the harpsichord; lord-keeper Guilford, besides being skilled in the modern languages and painting, was a scientific and practical musician, and composed pieces of music after he was honoured with a seat on the bench; Sir John Davis wrote a poem in lyric verse, on the antiquity and excellence of dancing; and lord Bacon composed an essay on the subject of masks. Many curious and amusing details are given by ancient writers of the customs and usages of these Inns in former times. They had their revels, their romantic festivals, their grand christmasings, their masquerades, their banqueting nights, their splendid pageants, and their pastimes and amusements of various kinds, in which the judges, sergeants at law and barristers often participated. "They sang, they danced, they made merry, and on their days of license their 'lords of misrule,' 'jack straws,' and 'kings of the cockneys' made the halls ring with festivity."

But the times have undergone a great change, and the course of education has changed with them. Few only of the ancient customs or ceremonies remain. Their feastings on grand occasions, their splendid pageants, their former pastimes and amusements, have long since been discontinued, and are known only to the antiquarian. Their readings, mootings, lecturings and other like exercises, have shared the same fate. Residence is no longer required, and consequently prayers are no [illegible] daily read in the chapels; dining in the halls [illegible] cation and supping has ceased; and scarcely anything remains but what is alluded to in that part of the report of the common law commissioners which we have already quoted. But the rank and character which the profession of the law assumes in the community, has not perhaps been very materially affected by these changes. It has still enrolled among its members some of the younger branches of the nobility, and scions of the most distinguished families in the country, although it is principally composed of the upper ranks of the middle classes, and has nevertheless many among its members who have by force of their talent and industry, struggled up from the lower classes in society. A barrister is still considered as a fit companion for the greatest nobleman in the realm, and those who have been members of the profession, are usually among the most distinguished in both houses of parliament and of his majesty's council.

In term time the benchers, barristers, and students, still continue to dine in the halls of the respective Inns of Court. They are not allowed to appear on these occasions without their gowns. The halls are much like those in the colleges at the universities of Oxford and Cambridge. The arms of their treasurer are painted on the windows, and portraits of their distinguished men are hung upon the walls. The barristers and students sit at the tables running along lengthwise of the hall, and the benchers sit at an elevated cross table at the upper end of the hall. The names of those dining in the hall are taken down by the steward every day during term in a book kept for the purpose. No one who dines in the hall can leave till grace has been said after dinner. The fare of the benchers is more sumptuous than that of the barristers and students. After dinner the benchers retire to their private room to drink their wine and partake of the dessert provided for them, in like manner as do the masters and fellows in the colleges at the universities. Here the candidates for admission to the degree of barrister are introduced in gowns and with bands, on the occasion of being called to the bar. The ceremony is as follows. The customary oaths are taken, after which one of the benchers declares to the candidates that the benchers have determined to call them to the bar, and congratulates them on the occasion, and [illegible] drinks their health, for which they return thanks, and then retire. They take the same oaths again in Westminster Hall, and thereupon are admitted to practice. The number of the benchers is limited, and vacancies are from time to time supplied by election made by themselves. King's counsel, however, become virtute officii benchers of the Inn to which they belong. In regard to the practice of dining in the halls in term time, so far as it regards students, the common law commissioners [illegible] "We conceive that that part of the present [illegible] of all the societies, by which students, in whatever part of the kingdom they may be resident, are required to dine in the common hall, a few days in the course of every term, is founded on just views and attended with beneficial effects. Amongst these may be noticed that of its making known the person of the student and exposing him, if his character be disreputable, to more easy detection by the society before the period of his application to be called to the bar. It also gives an opportunity of attending the courts, and associating with students and other members of the profession."

The chambers in the Inns of Court, we believe, are let, either from year to year, or for three lives; and each of the Inns of Court has a very large annual income arising from the rents of its estates and otherwise. The income of the Inns has been estimated, but with what accuracy we know not, at sixty thousand pounds sterling. Many complaints have been made recently and since the attention of the public has been particularly called to the subject, not only that this income is not so well employed as it is imagined that it might be, but that many of the rules and regulations of these societies relative to the admission and education of students and barristers, are not such as ought to regulate the education and admission to a profession occupying a most prominent and important rank in the civil institutions of the country.

Some of these are noticed by the common law commissioners as being in their opinion objectionable. And in their report they recommend that either by act of parliament, or by authority of his majesty in council, the societies be enjoined to allow, and the judges of the courts at Westminster to receive, an appeal from any acts of the benchers of any of the Inns of Court rejecting an application for admission into their society; and that it should be established by way of positive regulation that in all cases where an application is rejected, whether it relates to admission as a student, or to the call to the bar, the party applying shall have notice in writing of the cause of rejection,—shall be allowed to clear himself from any charge of misconduct which it may involve, and for that purpose shall be at liberty to make his defence either in person or by counsel, and to produce evidence, and that a full report of the whole evidence and other proceedings before the benchers, shall in the event of an appeal, be laid before the judges. They further recommend, that it should be ordained that no general rules, or orders in future, to be made by any of the societies on the subject of admission of students, or call to the bar, shall be of any force until they shall have been laid before all the judges of the superior courts at Westminster, to be assembled for this purpose, and approved and subscribed by such judges, or eight or more of them, which they remark would be a partial return to the ancient practice. They also express an opinion that the rule requiring special pleaders and conveyancers to obtain a license from the societies to practice is objectionable. They propose that the certificate of two graduated members of any of the universities, or of two respectable householders, should suffice instead of the recommendation of one bencher or two barristers, when candidates are proposed for admission to the societies; and that in all the Inns of Courts the power of admitting or rejecting an applicant for call to the bar should in future be vested in the benchers only. With respect to the existing rules of the Inns of Court subject to these exceptions, the commissioners report that they appear to them to be free from objections.

Notwithstanding the apparently objectionable features of the rules and regulations of these Inns of Court, so far as they relate merely to the admission of students, or to the calling them to the bar, yet such is the character of the body invested with discretion in this regard, namely, the benchers, who are men at the head of their profession, and most of them far advanced in years, and such of course has been the manner in which this discretion has been exercised, that, from the earliest times, there have been very few cases of complaint, and even in those, from the best accounts we have of them, there is hardly room for a doubt of the correctness of the decision of the benchers.

LAWRENCE, John, author of a treatise on the Horse, and other practical works, died at Park Place, Peckham, April 17, 1839, aged eighty-six. He was, in early life, one of the first advocates of legislative enactments for the suppression of cruelty to animals; and his writings were of eminent assistance towards obtaining those acts of parliament which were passed for their protection. The following is a list of Mr Lawrence's works:—"A Philosophical and Practical Treatise on Horses, and on the Moral Duties of Man towards the Brute Creation. Account of former Writers—Management and Medicine—Shoeing—Purchase and Sale," &c. Two vols. 8vo. Three editions. "The New Farmer's Calendar. Practical Husbandry—the Row Culture—Diseases of Vegetables—Live Stock—Poultry, &c." Five editions. "The Modern Land Steward." Two editions. "A General Treatise on Cattle—the Ox, the Sheep, and the Swine—Management—Breeding, and Medicine." Two editions. "A History of the Horse, and delineation of the Race Horse. The Breeding Stud—Breaking—Training, &c." 4to. plates. "A Treatise on Domestic Poultry, Pheasants, Pigeons, Rabbits, Swine, and Dairy Cows." Five editions. 12mo. Published under the assumed name of "Moubray." "British Field Sports. Game Laws — Shooting — Hunting — Coursing—Racing—Hawking—Cocking—Fishing, &c." 8vo. Under the name of W. H. Scott. "The Sportman's Repository. History, descriptions, and instructions relative to Horses and Dogs." Also under the name of W. H. Scott. "The descriptions of Alkin's (folio) Sporting Plates, with a French Translation." Two editions. 4to. With additions. "The Horse—in all his varieties and uses—with rules for his preservation from disease." Small 8vo. 1829.

LEACH, Sir John, late master of the rolls, was born in the town of Bedford, in 1760, where his father was a tradesman. He was educated at the grammar school there, and placed in the office of Sir Robert Taylor, the eminent architect, to whose business he applied himself with great attention and perseverance. He afterwards, however, commenced the study of the law, and entered himself at the Middle Temple on the 26th of January, 1785, and became the pupil of that eminent draftsman and judge, Sir William Alexander, then in great practice as a junior equity counsel. In Hilary term, 1790, he was called to the bar by that society, and chose the home circuit and Surrey sessions. He soon obtained considerable practice in these courts, and was distinguished for his neat, accurate, and forcible speeches, his pleasing and lucid statements of cases. The first important matter in which he was retained as counsel was the Seaford election, both at the election, and on the subsequent petition against it; being his first connection with that borough, which he afterwards represented in parliament. In 1800 he began to confine himself to equity practice; and although this important step did not at once meet full encouragement, no very long period elapsed ere he became extensively employed. He was particularly celebrated for his able and correct pleadings in equity; they are, in fact, the foundation of many of the private MS. collections of value now in the profession. Some of them, marked J. L., have been printed in the collection by Mr Van Heythusen, and they have long been valued and followed by the practising equity draftsmen of the present day. His capabilities as a lawyer were, however, by no means confined to his chambers. In court he rose rapidly into eminence, combining very considerable learning with great powers of arranging and condensing facts. His speeches always enforced attention, being clear, precise, and nervous. He contended often pre-eminently, even with Sir Samuel Romilly, and was generally preferred to Sir Anthony Hart, to both of whom he was constantly opposed, more especially when he became King's counsel. His temper was warm and irritable, and he was frequently involved in personal altercation with the advocate to whom he was opposed. His talents as a speaker not only secured his employment in the equity courts, but gained him considerable business at the Cock-pit, more particularly on West India appeals. He was, moreover, distinguished for his despatch and powers of disposing of his business. In politics, although he never took a very active part, he was a Whig, and was early introduced to the leaders of that party,—Mr Fox, Mr Sheridan, and others. In 1807, he took a more distinguished stand, both in his profession and before the public. He had ever since 1792 been more or less connected with Seaford. In 1795 he had been elected recorder; and having resided and purchased property in the place, he had by degrees obtained sufficient influence in the borough to return both its members in the general elections in 1806 and 1807. In the election in 1807, he himself was returned for that borough, and voted with the Whig administration. In 1811 he spoke in favour of the regency bill, and thought it advisable to print his speech; and from this time the favours of the court flowed in upon him. He was consulted by the prince of Wales as to the propriety of issuing a commission to Italy respecting the conduct of the princess of Wales; and in 1817 he succeeded Sir Thomas Plumer as vice-chancellor, and was knighted. His appointment was on the whole considered a proper one, and gave satisfaction to the profession. In May, 1827, he succeeded Sir John Copley as master of the rolls, on his acceptance of the great seal. He held the office of master of the rolls until his death, which happened at Edinburgh, on September 16th, 1834, on his road to visit the duchess of Sutherland. His most remarkable qualities as a judge, were his power of seizing on the important points in every case that came before him, and in his being able to deliver his opinion on them immediately, in a manner the most clear and precise. It sometimes, however, happened that he saw not all the bearings of it at the same moment, and, therefore, was liable to give a general judgment on merely particular, and sometimes even insufficient grounds. His decisions were as those that left either party simply content with them. They were so clear as to convince a man in spite of his interests, or they were so doubtful, from the cause already mentioned, that they were instantly appealed against. A more quiet and cautious judge, with the undoubted ability and talent of Sir John Leach, would have had fewer of his decisions appealed from; but then, when he was right, he would have given less complete and unanswerable reasons for the opinions he adopted. There can be little doubt, that the unfortunate state of Sir John Leach's health, working upon an excitable temperament, sometimes led him to take hasty and one-sided views of the cases brought before him, and to cling to his first impressions with the most determined resolution. This was his misfortune, while the merit of talent and the greater praise of learned industry, may be set off against it; and, however the circumstances of his health might sometimes affect his temper, the praise not merely of impartiality but of an earnest desire to do complete and equal justice most undoubtedly belonged to him.

LEACH, William Elford, M.D., F.R.S., one of the most laborious and successful, as well as one of the most universal, cultivators of zoology which this country has ever produced; died in Italy of cholera in 1836. His discoveries in the different classes of the vertebrata, especially birds, were extensive; but it was in entomology and malacology that his labours have been most known, and his improvements of the greatest importance. His knowledge of the crustacea was superior to that of any other naturalist of his time, and his arrangement the best, until the work of Dr Milne Edwards appeared. After a long suspension of his studies from ill health, during which, and up to the period of his death, he was attended by the most devoted of sisters, he returned to his favourite occupation with his habitual ardour, and the letters he wrote to his scientific friends in this country exhibited the same devotion to the study of nature which distinguished the brighter years of his life. His principal work, "The Natural History of the Mollusca of Great Britain," in the possession of his friend Mr Bell, is not yet published. His other works were "Malacostraca Podolphthalma Britanniæ," 4to, 1815 and [illegible], not finished; "Zoological Miscellany," 3 vols. 8vo, 1817; "On the Genera and Species of Proboscideous Insects," 8vo. 1817. He described the animals taken by Cranch in the expedition of Capt. Tuckey to the Congo; and was the author of valuable articles in the Encyclopædia Britannica, Edinburgh Encyclopædia, Philosophical Transactions, Zoological Journal, Memoirs of the Wernerian Society, Dictionnaire des Sciences Naturelles, &c. Between 1810 and [illegible], he contributed seven papers to the Transactions of the Linnæan Society: three on Insects; a general arrangement of the Crustacea, Myriapoda, and Arachnides, a very laborious work; two descriptive of two new genera of Bats; one on three new species of Glareola.

LEADHILLS: a village of Scotland, in the upper ward of Lanarkshire, long celebrated for its lead mines. It is situated 1280 feet above the level of the sea, being the most elevated [illegible] in the south of Scotland, and the [illegible] [illegible] the hills afford have occasioned the concourse of miners, and the establishment of this and the neighbouring village of Wanlockhead.

According to common report, the lead mines were discovered by a German of the name of Bulmer, when searching for gold in the banks of the adjoining rivulets. This account is extremely probable; for the numerous hillocks on the banks of the streams which discharge themselves into the Clyde and Nith, bear evident indications of having been thoroughly searched for that precious metal: even so much so that those miners who at present amuse themselves during their leisure hours, in searching for gold, cannot find a spot that has not previously been explored.

The method of searching for gold adopted at Leadhills is as follows: the surface of the rock is laid bare; the earth, sand, &c., in its crevices, are collected, riddled, and washed. The water carries away the earthy particles, and leaves those materials which are of greater specific gravity than itself, as flint, quarts, and what gold there may be. The proceeds from one puddle, as it is called, are generally, at the most, not more than a few particles, not larger than the point of a pin; but a man in six hours, at an average, may collect about four pennyworth of gold. Some pieces, however, have been found as large as a pea, or small bean. These gold mines, however, were once productive; for history informs us that in the reign of James V. of Scotland, three hundred men were employed in them; and when that monarch, in a hunting excursion in the adjacent moors, dined in Crawford castle, each of his retainers, for dessert after dinner, was presented, on a wooden platter, with a few bonnets crowns, as the produce of the soil. These pieces were coined from gold obtained in the mines of Glengonar, the rivulet upon which Leadhills is now built.

Lead, however, for centuries, has formed the mineral riches of these mines. The vein has more than once expanded to the enormous width of fourteen feet; but seldom exceeds more than four and a half feet, and this was considered by the miners as a very good lead. At present the trip, or annual number of bars, (of 144 pounds each,) amounts to 10,000 in Leadhills, and to about 8000 in Wanlockhead; whereas at one period 35,000 were made at the former, and 15,000 at the latter.

The population of the village of Leadhills is upwards of 1200. Of these 300 are working miners, smelters, washers and labourers; the rest consist of women, children, and old men. The miners here have been long noted for intelligence. So early as 1741 a library was established among them by Mr James Stirling their overseer, and it now numbers above 2000 volumes. They possess other advantages, in only working six hours in the twenty-four, and being allowed by their landlords, the earl of Hopeton and duke of Buccleugh, as much land as they can work with the spade. Allan Ramsay was a native of Leadhills.

LEAMINGTON; a village in Warwickshire, which, since the beginning of the present century, has become a fashionable watering place. The mineral waters to be found here are valued on account of their efficacy in the cure of cutaneous diseases, glandular obstructions, bilious and dyspeptic complaints, &c., for which they are used both internally and externally. The original spa contains a large proportion of common salt, besides sulphate of soda, muriate of magnesia, and sulphate of lime; and there are also chalybeate and sulphureous springs, the latter of which being chiefly used externally. A bridge over the river Leam connects the new town with the original village, and on both sides of the river are many houses well built and elegantly furnished for visitors. Population of parish of Leamington in 1831, 6209.

LEIGH. There are a number of parishes and chapelries in England with this name, the most important of which is that of West Leigh in the county of Lancaster. It is situated conveniently for water communication, and is one of the busy districts of Lancashire manufactures. It includes the townships of West Leigh and Pennington. Muslins, cambrics, calicoes, and fustians, are the principal articles here manufactured; several new commercial establishments have taken place in and near the town of late years; and the numerous population of the parish appears to have been greatly augmented. Here are coal-mines, and likewise lime-pits, which furnish a valuable kind of limestone, the lime from which has the property of hardening under water. Leigh was the residence of Thomas Highs, the inventor of the water-frame, which served as the basis of Arkwright's improvements in cotton-spinning. Population in 1831, 20,083.

LEOMINSTER; a town in Herefordshire, situated on the river Wye, 137 miles W.N.W. from London. The buildings in the outskirts of the town are very indifferent, and many of the streets are narrow and inconvenient; but the High street is spacious, and contains many modern edifices of a respectable appearance; and the situation of the place as a thoroughfare on the great road from London to South Wales has occasioned the erection of several good inns. The town-hall, or, as it is commonly called the butter-cross, is a singular structure of plaster and timber-work, erected in 1633, by John Abel, a noted architect of that period. It stands on twelve oak pillars, with a kind of Ionic capital, and sustained by stone pedestals the brackets and spandrels above the arches, and the upper parts of the building are profusely ornamented with carving. The principal manufactures carried on here formerly were those of woollen cloth, hats, and gloves; but the last-mentioned is declining, and the others have almost disappeared; among the existing branches of industry are flax-dressing, rope-making, tanning, malting, and nail-making. Population of the burgh in 1831, 4300; of the whole parish, 5249.

LEOPOLD, CHARLES WILLIAM, Secretary of State in Sweden, and member of various learned societies, was born at Stockholm, on the 2nd of April, 1756. His father was comptroller of the customs there, but as his income was very limited, he had not the means of giving that education to his son which the latter was anxious for. He was indebted to the kindness of a learned French teacher, who had remarked his good disposition, and took pains to instruct him in French, so successfully that in no long time he knew it as thoroughly as he did his mother tongue. This first part of his education had a material influence on his future studies, as well as on his fortune through life. In 1773 he entered the university of Upsal, where he published a Latin Thesis, *De origine idearum moralium*. In 1778 he published an ode on the birth of the prince royal, Gustavus Adol phus, which was criticised by Kellgren, and led to an intimacy between the poet and the critic. As Leopold was obliged to earn by his labours the means of continuing his studies, he was sometimes obliged to interrupt them. By dint of savings he at last realized a small sum, which enabled him to repair to the university of Greifswald, where he took his degree of doctor of philosophy in 1781. He returned to Sweden in 1784, and the learned Liden committed to him the care and superintendance of the library which he had presented to the university of Upsal. Through the interest of two of his noble friends, baron Erenheim and count de Creutz, he was introduced to the notice of the king, Gustavus III., who invited him to Stockholm, gave him an apartment in the palace, and a sum of money to pay his debts. In 1786 the king founded the Swedish academy, and named thirteen members, who were to appoint the other five to complete "the eighteen." Leopold was one of these five. In 1788 he had the charge of the royal library of Drotningholm, and in 1778 became the king's private secretary. Leopold accompanied his Majesty in his campaign against the Russians, and wrote odes on his victories, and verses on his defeats. In 1790 his tragedy of Odin was brought out at the theatre of Stockholm, when the king sent him a diamond ring, and two laurel leaves gathered at the tomb of Virgil. At the end of the same year he married Miss Ferman, daughter of a Danish counseller of justice, a lady of great beauty and accomplishments, and deeply conversant with French literature. The death of the king was a great blow to Leopold's fortunes. Shortly after that event the Swedish academy was suppressed by the ministry, and Leopold removed from the capital, to which he did not return until the academy was re-established by Gustavus Adolphus IV., who made him amends for the long obscurity in which he had been left by the flattering distinctions conferred upon him. After the deposition of Gustavus, and the change of dynasty which succeeded, he continued to be treated with equal favour. The last ten years of his life were very melancholy. After suffering greatly for nearly three years, he became totally blind; and nearly about the same time his wife became insane, and continued so till the third of May, 1829, when she died. Her husband survived her just six months, he dying on the 3d Nov. 1829. Leopold was considered as at the head of the French school of literature in Sweden—a school now nearly exploded in that country.

LEWES; a town in the county of Sussex, situated on the right bank of the Ouse, forty-nine miles S. by E. from London. It is a place of great antiquity; and still retains the remains of an ancient fortress. The borough has returned two members of parliament since the reign of Edward I., a privilege which the Reform Bill continues. The principal manufacture now carried on here is that of paper: on the banks of the Ouse are some cast-iron founderies. The trade in wool was formerly extensive, but grain and malt, sheep and cattle, are now the chief articles of traffic. The river is navigable for barges to Newhaven. The county assizes are held at Lewes. Population in 1831, 8592.

LIBRARIES, (*a*.) The contents of the public libraries of Europe, which amount to between seven or eight hundred, have been estimated by Malthus at 19,847,000 volumes. Of these there are in

Germany	Austrian States	[illegible]	[illegible]
	Prussian do.	[illegible]	
	Other German States	[illegible]	
France			[illegible]
Italy			[illegible]
Great Britain			[illegible]
Russian Empire			[illegible]
			[illegible]

M. Adrien Balbi gives a tabular view of twenty-nine of the largest libraries in the world; and he also presents a variety of the different statements of different writers, respecting the number of volumes contained in some of the principal libraries in Europe, with some remarks on the difficulty of obtaining authentic and correct information on the subject. With respect to different modes of computing the number of volumes in a library, he says —"One author counts only the printed books; to these another adds the number of manuscripts; a third reduces to a certain number of volumes the dissertations, pamphlets, and fugitive pieces, which are preserved in a separate form, or bound in volumes, and which were entirely excluded by the first from the enumeration; a fourth adds by the same process a certain number of volumes for the engravings, maps, and designs, which are not comprised in the printed volumes which they accompany; and a fifth regarding as so many volumes all the dissertations, pamphlets, and fugitive pieces thinks proper to add their number to that of the printed books contained in the library, the number of volumes of which he thus increases in an extraordinary manner."

Table of the Largest Libraries in the World, Ancient and Modern, from M. Balbi.

	Vls. pr.	MSS.
Paris, *Royal*	[illegible]	[illegible]
Munich, *Royal*	[illegible]	[illegible]
St Petersburg, *Imperial*	[illegible]	[illegible]
Copenhagen, *Royal*	[illegible]	[illegible]
Vienna, *Imperial*	[illegible]	[illegible]
Berlin, *Royal*	[illegible]	[illegible]
Pekin, *Imperial*	[illegible]	
Dresden, *Royal*	[illegible]	[illegible]
Gottingen, *University*	[illegible]	[illegible]
London, *British Museum*	[illegible]	[illegible]
Oxford, *Bodleian*	[illegible]	[illegible]
Wolfenbuttel, *Ducal*,	[illegible]	[illegible]
Madrid, *Royal*	[illegible]	[illegible]
Paris, *Arsenal*	[illegible]	[illegible]
Stuttgard, *Royal*	[illegible]	[illegible]
Milan, *Brera*	[illegible]	[illegible]
Naples, *Museum*	[illegible]	[illegible]
Florence, *Magliabechian*	[illegible]	[illegible]
Breslau, *University*	[illegible]	[illegible]
Munich, *University*	[illegible]	[illegible]
Edinburgh, *Advocates'*	[illegible]	[illegible]
Jeddo,	[illegible]	
Miaco,	[illegible]	
Alexandria, *Ptolemy's*	[illegible]	
Tripoli in Syria, *of the Kadis*	[illegible]	
Cairo, *Caliphs'*	[illegible]	
Alexandria, *burnt by Arabs*	[illegible]	
Rome, *Ulpian*	[illegible]	
Cordova, *Caliphs'*	[illegible]	

The number of volumes in most of the above libraries is stated by some writers as considerably greater; by others, as smaller; but the above statements are such as M. Balbi thinks most to be relied on. With respect to the number of volumes contained in the several ancient libraries above enumerated, there is great uncertainty; and it is difficult to fix upon any satisfactory method of computing them.

In the "Gentleman's Magazine," for January 1836, the Bodleian Library is stated to contain 420,000 volumes; and the Library of the [illegible]

Museum 305,000; and in the "Monthly Review," for May, 1836, in a notice of a "Report from a select committee on the condition, management, and affairs of the British Museum," it is stated to "contain 218,950 printed volumes, 21,604 volumes of manuscripts, and 19,093 charters." M. Balbi gives several statements of the number of volumes in the Bodleian Library, which vary from 130,000 volumes to 700,000 volumes and 30,000 manuscripts.

With respect to the number of volumes contained in the Vatican Library at Rome, there is a singular disagreement among the different authorities. The following statement from various authorities is furnished by M. Balbi:—

	Volumes.		Manuscripts.
Rampoldi	90,000	more than	45,000
Malchus . . .	160,000		
Bisinger	160,000		
La Revue Britannique (1802)	400,000	. .	50,000
Bailly, (1827) . . .	400,000	. .	50,000
D'Hamsen	800,000	. .	38 000
Eustace from	200,000 to 1,000,000	. .	50,000

M. Balbi in his *Essai Statistique sur le Royaume de Portugal*, published in 1822, stated the contents of the Vatican Library as follows;—printed volumes 60,000; manuscripts 60,000? And in his more recent work on libraries he remarks:—"What shall we say of the ridiculous, not to say absurd, exaggerations which are found in works justly celebrated, respecting the number of volumes in the Vatican Library at Rome, and the Bodleian Library at Oxford?—With respect to the Vatican Library, we do not blush to confess, that, led into error by imposing authorities, we exaggerated the number of manuscripts, although the point of interrogation which accompanied the number, sufficiently indicated our doubts. As, since then, the library of an illustrious *littérateur*, whose recent death Italy laments, that of the count Leopold Cicognara, has added nearly 10,000 printed volumes to the Vatican, we believe that one may now carry the actual number to nearly 75,000; and we reduce to about 35,000 the number of manuscripts." Yet Mr Eustace in his "Classical Tour through Italy," says of this library;—"The number of volumes has never been accurately stated; some confine it to 200,000, others raise it to 400,000, and many swell it to 1,000,000." The London "Quarterly Review," in 1826, says;—"The library of the Vatican is the most considerable in the world;" and the London "Foreign Quarterly Review," for April, 1836, says;—The Imperial Library (at Vienna) which contains about 300 000 *volumes*, acknowledges but three equals in Europe, that of the Vatican at Rome, and the Royal Libraries at Paris and Munich."

Contents of the Royal Library at Paris in 1822.

Volumes of every description	. . .		450,000
88,000 pamphlets and fugitive pieces,—equal to vols.			45 000
300,000 maps, diplomas, &c.	—	—	24,000
8,000 manuscripts . . .	—	—	80,000
300,000 engravings, prints, &c. .	—	—	6,000
			605,000

Since 1822, this library, according to M. Balbi. as been increased at the rate of upwards of 8,000 olumes a year.

Contents of the Imperial Library at Vienna.

olumes printed since the year 1500 .	270,000
olumes of *Incunables* (i.e. printed in the 15th century)	12.000
anuscripts	16.016
olumes, Portfolios, &c. forming a collection of Maps	1,242
	299,258

M. Balbi enumerates forty-two libraries in Vienna, which altogether contain 1,143,000 volumes.

Public Collections of Maps.

		Number of Pieces.
Paris, (Cabinet of Maps,) .	more than .	1,400,000
Munich, ...	. do. . .	300,000
Vienna	about . .	300,000
Dresden	. do. . .	250,000
London, (British Museum) .	do. . .	100,000
Copenhagen . . .	do. . .	80,000
Amsterdam . . .	do. . .	70,000

M. Balbi states the annual endowment or expenditure of several of the European Libraries, as follows:

	Francs.		Francs.
Bodleian, Oxford, .	75,000	Royal. Copenhagen. .	22,640
Imperial, Vienna, .	47,500	University, Gottingen,	20,000
Royal, Berlin, . .	29,680	Royal Madrid, . . .	14,000
Advocates', Edinburgh,	25,000	Royal, Dresden, .	10,000

Libraries are generally of slow growth, and a long series of ages has been required for the accumulation of the large ones enumerated in the preceding table. The largest libraries in the United States of America are comparatively small. That country is, indeed, too young to enter into a competition of this kind with the countries of Europe; yet, since the commencement of the present century, public libraries there have greatly increased in number and size.

LISBURN, (originally *Lisnegarvey*,) a handsome and thriving town in the county of Antrim, Ireland, situated on the north-western bank of the river Lagan, which separates Antrim from Down, and on the high road from Dublin to Belfast; distant from Dublin ninety-three miles N.; from Belfast, nine S. W. by S. A small suburb on the opposite side of the river is now included within the limits of the burgh. Lisburn carries on a considerable trade in the various branches of linen and cambric manufactures. The diapers and damasks of the place are greatly valued for their fineness of texture. The establishment of a number of French refugees in this town after the revocation of the edict of Nantz, was attended with the happiest consequences to the character of these fabrics, a reputation preserved in the commercial world to this day. In the neighbourhood are extensive establishments for printing, bleaching, and dyeing. The general retail trade of the town is extensive. On market days, (Tuesdays) large sales are made of provisions, agricultural produce, linens, &c. The church of Lisburn, which was erected into a cathedral for the united sees of Down and Connor, by patent, dated October 22 1662, is a spacious edifice, adorned with a steeple and spire. The market-house is also ornamented, being enlivened by the erection of a steeple and cupola, and the rooms in the interior have been fitted up at the expense of the marquis of Hertford. Here are also meeting-houses of Presbyterians, Quakers, Methodists, &c., besides a handsome Roman Catholic chapel. In the reign of James I. Sir Fulk Conway obtained a grant of this place, and colonised it with a number of Welsh families. The town then erected was upon a regular plan. In 1641, Sir George Rawden defeated the rebel army here; and in 1662, the inhabitants received a patent, empowering them to return two members to parliament in consideration of their loyalty and attachment to the royal cause. It now returns one member to the imperial parliament. The living is a rectory in the diocese of Connor and archdiocese of Armagh; patron, the marquis of Hertford, who is owner in fee of the whole town. The *parish* of Lisburn is partly in the county of Antrim, and partly in the county of Down. It contains 13,249 inhabitants, of which 5218 are in the town, 5941 in that part of the county which is in Down, and 2090 in that which is in Antrim.

LIVERSEEGE, Henry, a very promising young painter in the higher walks of the art, was born at Manchester in the year 1803, and from infancy was afflicted with asthma. His father was connected with the cotton-trade, but he was indebted to an uncle for his education. The exact period cannot be fixed upon when first he decided on pursuing the arts; but, it was long ere he discovered the true bent of his genius—dramatic painting; for the earlier periods of his youth were spent in portrait-painting. On his first composition in this style being exhibited at Manchester, it immediately attracted the notice of many judges of taste; and from that time his affairs began to assume a more brilliant aspect, and he was enabled to pursue the studies most congenial to his feelings and habits. Every new composition afforded indubitable signs of the felicity of his choice, and of his rapid improvement in the art. He possessed a vivid perception of the beauties of poetry and romance; his compositions are derived chiefly from works of imagination, and are treated in a manner which clearly attests his aptitude for this particular style. His picture of the "Black Dwarf," taken from Scott's novel, was the first subject he exhibited at the royal academy. About 1826, he began to visit London for three or four months at a time, to draw at the British Museum, and copy at the British Institution; and his copies at the latter place were admirably close in resemblance to the originals, especially those from Rubens, Vandyke, and Teniers. To the exhibition of the society of British artists in 1830, he sent his painting called "The Inquiry," representing a country lad, with game, standing before a burly and pompous porter at the door of a country mansion. In the exhibition of this society in 1831, he had three paintings;—the "Grave-diggers," from Hamlet; "Catharine Seyton," and "Benedicite, or Holy Daughter." To the royal academy exhibition of 1831, he sent two pictures, "Sir Piercie Shafton, and Mysie Happer," from Scott's Monastery, and "Hamlet and his Mother in the closet." In 1830, he exhibited at the British Institution the "Weekly Register," representing a cobbler devouring with straining eyes the contents of Cobbett's last Register. And in the following year he had "Captain Macheath in Prison." To the Manchester Exhibition in August, 1831, he sent four paintings:—"The Register," "Don Quixote in his Study," "The Fisherman," and another "Don Quixote." The picture of "Don Quixote" was exhibited at the British Institution in 1832, together with one called "The Recruit,"—an enlisted country bumpkin in an alehouse: an admirable production, a water-colour sketch of which, also, he completed. During his stay in London in the summer of 1831, he finished several pictures, both in oil and in water-colours. One in oil, which he did not live to complete, was "Salvator Rosa among the Banditti:" and another was "Edie Ochiltree," from the Antiquary. Among his sketches in water colours were "Slender and Anne Page" and "Sir John Falstaff and Bardolph." Liverseege's death took place at London, on the 13th Jan. 1832. In height he was about five feet five, of a thin spare body, and rather deformed in the left shoulder; complexion very pale; countenance restless and inquiring; his eyes especially always bespoke continual anxiety, and his mouth great nervousness and irritability. In temper he was irritable; which, however, did not arise from malevolence of nature, but was the effect of ill-health.—in disposition he was humane and generous,—in mind, elevated and refined;—in his manners gentlemanly and courteous.

LLANDAFF; (*i. e. church on the Taff,*) a village in the county of Glamorgan, Wales, situated on the river Taff, 162 miles from London. It claims the title of city from being the see of a bishop. It has a small harbour on the north bank of the Severn, two miles from Cardiff. Population in 1831, 1299.

A church was founded here immediately after the introduction of Christianity into Britain; and about the close of the fifth century, Saints Germanus and Lupus, the virtuous opponents of Pelagianism, consecrated Dubricius to be the first bishop of this see: upon his translation to Caerleon, Teliaus succeeded to Llandaff. The names of the bishops of this diocese from its foundation to the close of the ninth century, are all preserved, but the dates of their consecrations and deaths are uncertain. The see comprehends about three-fourths of the county of Glamorgan, and the whole of Monmouthshire, seven parishes excepted.

The cathedral was erected during the prelacy of bishop Urban, A. D. 1120, and some beautiful specimens of Norman architecture still survive amongst the extensive ruins. Some parts of this venerable edifice were repaired, chiefly at the expense of bishop Watson, but the renovation was in an unhappy style, quite neglectful of the elegant proportions of the great original itself. The altar is placed beneath the portico of a Roman temple, not in harmony with any other passage in the whole fabric. The ancient chapter-house and muniment room, are well preserved. Here are also a new chapter-room, with a kitchen, and an office for the [illegible]-general, in the church-yard. Several ancient monuments adorn and give interest to this fine structure. The see of Llandaff can boast of having possessed, within the last seventy years, the distinguished names of Shipley, Barrington, Watson, Marsh, Van Mildert, Sumner, and Copleston.

LLANGOLLEN; a town in the county of Denbigh, Wales, situated on the river Dee, the great post road from London to Holyhead passing directly through it. The bridge here over the [illegible], erected by the bishop of St Asaph, in [illegible], is a great curiosity. About two miles from it is the abbey of Valle Crucis, and not far from it the ruins of one of Owen Glendower's castles.

The influx of tourists, during the [illegible], [illegible] the romantic vale of Llangollen, contributes [illegible] to the support of the villagers. Manufactures [illegible] flannel and cotton, both upon rather an extensive scale, occupy many hands. The lime-kilns in [illegible] parish, and coal-mines in the adjoining, also [illegible] much employment; and the Ellesmere canal, [illegible] is conveyed across the Dee, from one side of [illegible] vale to the other, by an aqueduct [illegible] feet [illegible] length, affords commercial facilities of great [illegible]tage to this parish. The canal is fed by the [illegible] Dee, and extends along the vale from the [illegible] to the Oernant slate-quarries. Population of [illegible] and parish of Llangollen in 1831, [illegible].

LODGE, Edmund, K. H. Clarenceux King of Arms, F. S. A., son of the Rev. Edmund Lodge, rector of Carshalton in the county of Surrey, was born in Poland street, London, on the 13th of June, 1756. He became a cornet in the King's own regiment of dragoons in 1772; but disliking the military profession, he remained only a short time in the army. Having shown a taste for literature and antiquities, the situation of Blue Mantle Pursuivant-at-Arms was obtained for him on the 22nd Feb. 1782. He was promoted to be Lancaster Herald on the 29th Oct. 1793, Norroy on the 11th June 1822, and Clarenceux on the 30th July 1838. Mr Lodge's talents first became known by the publication of the Talbot, Howard, and Cecil papers in the college of arms, which appeared in three volumes, 4to. in 1791, entitled, "Illustrations of British History;" and the ability with which they were edited at once established his reputation. His next publications were the memoirs attached to Chamberlaine's "Imitations of original drawings by Hans Holbein," which came out in parts between 1792 and 1800. In 1810 he published (without his name) "The Life of Sir Julius Cæsar, with memoirs of his family and descendants," in quarto, with numerous portraits. But the work upon which Mr Lodge's reputation will principally rest are his well-known memoirs in the "Portraits of Illustrious Personages of Great Britain," originally published in 1821; of which it is no exaggeration to say, that they are a model of biographical composition. Mr Lodge published no other work; and his only additional writings (besides a few unimportant articles) are the preface to the second edition of the Antiquarian Repertory, the preface to Sir Hanbury Williams's Poems, and reviews (we believe) of the Sadler Papers, History of London, Scott's edition of Swift, &c., in the Quarterly Review. From motives of benevolence he was induced to lend his name to an Annual Peerage; but we are informed that the merit of those accurate volumes (for the work has been frequently reprinted) belongs entirely to the ladies whose names are affixed to the dedication. Through the influence of a nobleman, no less distinguished for his literary attainments than by his public services, Mr Lodge was nominated a knight of the rder of the Guelphs of Hanover in 1832. The honour was granted solely in consideration of his talents, and without the slightest solicitation on is part. He died, Jan. 16, 1839, aged eighty-hree.

LONG, John, a noted quack doctor of the preent century, was born at Newcastle, in the county f Limerick, in the year 1798. He was the seond son of John Long, in whom were united as any callings as Dicky Gossip ever exercised; for, esides basket-making, which was his original ocupation, he was steward, parish-clerk, harness-aker, wire-worker, constructor of winnowing mahines, and vender of every thing. His mother's ame was Anne St John. At an early age, John mulated his father as a "Jack of all trades." In dition to the hereditary occupation of basket-aking, he became a carpenter, a painter, and a zier. Before he was seventeen years of age, owever, he had thrown aside the chisel and the amond, and confined himself entirely to the penl. A lady of the name of Schuter, who lived in oneraile, was the first person who noticed his rly talents: she gave him little prints and drawgs to copy; and, whilst thus stimulating his exertions, instructed him by her advice. Public interest was soon excited in favour of so promising a boy; and a subscription was made by the Doneraile family, and the gentry in the neighbourhood, to send young Long to Dublin, where, towards the end of 1816, he was placed, for two years, under the care and instruction of an ornamental furniture painter. He afterwards employed himself in giving lessons as a drawing master, in Limerick, and also at different places in the county of Cork. He painted several still-life pieces; took some views, among others one of Kicoleman castle, the residence of Spencer, and the place at which he wrote "The Faerie Queen;" and even attempted portraits. It was about this time, that he assumed his maternal name of St John, as an addition and improvement to his baptismal name of John. He soon panted, however, for a wider and a nobler field of action; and in the year 1822, he set off for London. His stock in trade consisted of some of his own paintings, and a scripture piece, representing "The Woman taken in Adultery," which he had restored from a state of sad mutilation, and on which, with an enthusiasm pardonable in young minds, he relied, as a kind of bank on which he might draw for future subsistence. This picture afterwards contributed to ornament Mr Long's principal receiving room in Harley street. What it was which induced the young artist to relinquish the pencil, and to undertake the cure of consumption,—we have been unable to discover. In a letter to a friend, written in the year 1826, he mentions having successfully treated a carriage-painter, who was apparently in a decline. The result of this first attempt encouraged him to proceed; and as, like all young practitioners, he prescribed gratis, he had no want of patients. In the beginning of 1827, he states, in a letter from Bakewell, near Bristol, that he had applied his, "discovery," as he calls it, successfully, not only in cases of consumption, but in rheumatism and other complaints. He here began to receive fees; and after realising enough to clear his debts, he returned to London. For a short time, Howland street, Fitzroy square, was the place of Mr Long's residence; but increasing business gave increasing confidence; and, in the beginning of 1828, he took possession of the house, No. 41, Harley street, Cavendish square, where he adopted the new course of receiving all his patients; having rooms handsomely fitted up for the purpose, and a suitable establishment of servants in attendance. Harley street was every day thronged with carriages conveying rich and noble patients to and from his residence. In the year 1830, a young lady of the name of Cashin, who had been one of Mr Long's patients, happening to die a few days after she was taken from under his care, an inquest was held on the body, and a verdict of "manslaughter" was found against Mr Long. This verdict led to a prosecution. At the trial, no fewer than sixty-three of his patients, most of them persons of rank and opulence, appeared as witnesses in support of Mr Long's practice. The jury, however, brought in a verdict of guilty; upon which he was fined £250 and discharged. In the subsequent year, Mr Long was again tried, in consequence of the death of a Mrs Lloyd, who had been under his care; but was acquitted. His own death, which took place on the 2d July, 1834, was attributed to a fall from his horse several months before. Although he complained of a pain in his side after the accident, he could not be prevailed upon to apply any of his own or other remedies to relieve that pain, or to cure him of a cough which he had contracted. The consequence was that he fell into a rapid decline. He bequeathed the bulk of his property to his brother William; in which bequest is included his *discovery*, or secret, which he desires may be sold for £10,000. It is understood that the secret has been purchased.

LONGFORD; a small county of Ireland, in the province of Leinster, comprehending an area of 263,645 acres, of which 192,506 are cultivated land, 55,247 are bog and mountain, and 15,892 are covered with water. It is bounded on the north by the counties of Cavan and Leitrim; on the east and south by Westmeath county; and on the west by the navigable river Shannon. It presents for the most part a level surface, with the exception of the north-western angle, which is occupied by a chain of rugged hills, forming, in part, the separation between this county and Leitrim. The Shannon is the principal river of the county, after which come the Inny, Camlin, Tallen, and others of minor importance. Lakes are numerous, and abound with fish. Longford is almost entirely an agricultural county. Wheat, barley, and oats, are grown extensively, and transported to the markets of Dublin and Drogheda. Minerals have not yet been discovered to any extent. Iron ore is found in the mountains in the northern baronies; and it is probable that the Leitrim coal-field extends into the same district. The civil division of the county includes the baronies of Abbeyshruel, Ardagh (an ancient bishopric), Granard, Moydow, and Rathcline. In these are several good towns, the chief of which are Longford, the assize town, (situated on the river Camlin, seventy-four miles, W. from Dublin; pop. 4354) Granard, Edgeworthstown, (q. v.) Ballymahon, and Lanesborough. Linen is manufactured in various places, and markets for linen and yarn established in the principal towns. The navigation of the river Shannon, in its passage along the boundary of this county, admits of a free mode of transport to the port of Limerick, and so on to the Atlantic; while the extension of the royal canal to Richmond Harbour, with a branch to the town of Longford, throws open the market of the metropolis to this county. Population in 1831, 112,558. Longford is the native county of Oliver Goldsmith and Maria Edgeworth.

LONSDALE, James, an eminent portrait painter, was born in Lancaster, on the 16th May, 1777. One of his earliest friends was a gentleman of the name of Threlfall, an architect of that town, who, perceiving his young friend to possess considerable talent, and a great love for drawing, lent him every facility which his house could afford for his improvement. Some years afterwards, when he had made considerable advancement, the late duke of (then lord Archibald) Hamilton saw several of his drawings, and was so much pleased with the promise they displayed, that he invited him to Ashton hall, his Grace's seat, in the neighbourhood of Lancaster. Here he became acquainted with lady Ann Hamilton, the late duchess of Somerset, and the countess of Dunmore, the duke's daughter, who ever afterwards entertained the highest regard and esteem for him, both as an artist and a man. Mr Lonsdale finding that, however agreeably his time was passed at Ashton, another field was necessary for the development of his strength, and for the establishment of his reputation as an artist, determined at once to visit the metropolis. This, however, was not done without his having all the difficulties of such a course fully laid before him by the duke. Nothing disheartened by these considerations, which he had already well weighed in his own mind, he set off for London, and immediately after his arrival was received by Romney into his house as a pupil. He soon afterwards took lodgings in London, and became a constant attendant at the royal academy; but he every year, in the prosecution of his profession, returned to Lancaster, and always with increasing reputation and success. At Opie's death, Mr Lonsdale had been so successful, that he was enabled to purchase the house of that eminent artist, in Berners street, in which he resided the remainder of his life. Soon after he had established himself there, he became acquainted with the late duke of Norfolk, who engaged him to paint the large historical picture of King John signing Magna Charta, which was afterwards executed in stained glass, and placed in the baron's hall at Arundel castle. He also painted seven whole-length portraits of his Grace. The original, which is an admirable likeness, full of character and executed with striking ability, is now in the possession of the present duke. Another, a large whole-length, is, we believe, placed in the county hall at Hereford. About this time he also had the honour of being patronized by his royal Highness the duke of Sussex, of whom he painted several portraits, as well as those of many of his royal Highness's personal friends. The late queen Caroline appointed him her Majesty's portrait-painter, and he executed several pictures of her, which were striking and characteristic likenesses. One of them, a half-length, with her celebrated letter to George IV. in her hand, is in the council-room of Guildhall. Amongst others of the numerous list of distinguished men who were the subjects of Mr Lonsdale's pencil, we may mention the emperor of Russia, the king of the Belgians, the grand duke Maximilian, the duke of Leinster, the duke of Argyll, Dr Parr, Sir Humphrey Davy, [illegible] &c. &c. He became a member of the Beef-Steak club soon after his acquaintance with the duke of Norfolk, (by whom, we believe, he was introduced there,) and in that society formed a friendly intercourse with many of the most distinguished characters of his time. His portraits of lord [illegible] and baron Wood are full of character, and [illegible] identify the men. His three last pictures [illegible] shortly before his death, were lord C[illegible] lord Zetland, and lord Dinorben. As an artist, he was more intent in bringing out the [illegible] the mind, in conjunction with a strict, but [illegible] representation of the features, than in working [illegible] inferior details, and in rendering his pictures [illegible] vating to common observers. Mr L[illegible] took place on the 17th Jan. 18[illegible]. He [illegible] shortly before he purchased Opie's house a [illegible] from Lancaster, by whom he left three sons. [illegible] private life he was highly esteemed, and [illegible] among his friends many of the most [illegible] men of the age for wit, ability, and high birth.

LOUGHBOROUGH; a town in the [illegible] Leicester, situated on the river Soar, on [illegible] road from London to Manchester, distant [illegible] from the former. The town has, within [illegible] twenty years, been much improved by the [illegible] of a new market-house and many handsome [illegible] edifices. The manufactures carried on here [illegible] those of cotton, worsted, and merino hosiery, and bobbin-net lace. For the last-mentioned article a patent was obtained, and the manufacture was confined to this place till the riots of the Luddites, during which the patent machinery was destroyed, in consequence of which the establishment was removed to Devonshire; but since that time the making of bobbin-net has been again introduced. Population of town and parish in 1831, 10,800.

LOUTH; a town in Lincolnshire, 144 miles from London, situated on the small river Lud, from which a canal has been constructed, communicating with the sea about seven miles distant. The principal public buildings are a town-hall, an assembly-room, and a theatre; and there are billiard-rooms and news-rooms. The town is lighted with gas. An extensive carpet and blanket manufactory has been established here; and among the other branches of industry, are worsted-spinning and making woollen stuffs, soap-boiling, and making coarse paper; besides which, here are ship-builders, mast, block, and pump-makers, machine-makers, iron-founders, and millwrights. By the Louth canal, vessels of considerable burden trade regularly to Hull and other parts of Yorkshire northward, and southward to London, carrying cargoes of wool and corn, and importing in return timber, coal, grocery, and other articles. Population of town in 1831, 6927.

LOWESTOFF, or LOWESTOFT; a town in the county of Suffolk, situated on a headland bordering on the German ocean, 114 miles from London. It is said to be the most easterly point of land in England. The headland or cliff is partly covered with gardens, forming terraces on the declivity; and between these gardens and the sea is a tract about half a mile in breadth, called the *Denes*, on which is an extensive line of fish-houses. The recent construction of an artificial harbour, and other works connected with the Norwich and Lowestoff navigation, has added to the commerce and prosperity of the place. Lowestoff has a large share in the herring-fishery, the Lowestoff herring being esteemed in England as the Lochfine are in Scotland. It has also a considerable trade in mackarel. The place is much frequented for sea-bathing in the summer. Population in 1831, 4394.

LUMSDEN, Matthew, LL. D., late professor of Persian and Arabic in the college of Fort Wiliam, Calcutta; entered into the employ of the East India Company in the year 1794. His official tation was first in the stationery department; but he appears to have applied himself with so much uccess to the study of the Persian and Arabic nguages as to induce the governor-general, on the 2th of May, 1803, to place him on the establishment of the college of Fort William in the capacity of an assistant to captain Baillie, then the prossor of those languages in that institution. In e following year he was highly commended by e government for his progress in the preparation a *Persian* grammar; a work which he published the year 1805. In 1808 he was appointed to suced captain Baillie, as Persian and Arabic profesr, still continuing to perform his duties under the ationery committee. In 1812, the Bengal governent, having then under their consideration the state the Calcutta Madrissa, or Mahomedan college, apinted Dr Lumsden, with Lieut. A. Galloway, to ggest such reforms as they might deem needful that institution. In the discharge of this duty, ey fully succeeded; and Dr Lumsden was appointed secretary to the Madrissa, with instructions to superintend it, and the various translations from English works into the Persian language, which were then in progress at the Madrissa. He published a new edition of his Persian grammar in 1810; and an Arabic grammar in two volumes folio, in 1813. In 1814 he received charge, as superintendent, of the Company's press at Calcutta, which he retained about three years. In 1818, he undertook, in addition to the duties of his professorships, those of secretary to the stationery committee; but his health soon exhibited symptoms of a rapid decline, which compelled him to quit India. Dr Lumsden came to England by way of Bombay, through Persia, Georgia, and Russia; and his departure was announced in the Indian prints as the loss to India of "one of the greatest orientalists of his age, to whose instruction a great body of the Company's servants, who were then performing the most important services in all parts of India, were indebted for that knowledge of the diplomatic language of India, which qualified them for the discharge of their official duties." His private virtues were described as "quite as distinguishing, although not so conspicuous, as his professional abilities." He arrived in England in 1820, in a state of health somewhat improved by journeying through a colder climate. In the following year he returned to India, and was again, on the 25th of January, 1822, appointed professor of Arabic and Persian in the college of Fort William; and in March, 1822, placed over the Calcutta Madrissa. These appointments he held till 1825, when he resigned the service of the Company, and arrived in England in 1826. Upon his final retirement from the service in India, the Madrissa committee recorded their sense of his merits and services in strong terms, ascribing the then highly flourishing state of the institution solely to his exertions to promote its prosperity. After his return to this country he lived in retirement till the period of his decease, which took place at Tooting Common, Surrey, March 31, 1835, aged fifty-eight.

LURGAN; a town in the county of Armagh, eighty-five miles N. from Dublin. It is a thriving place, the inhabitants being chiefly employed in the manufacture and sale of linen, cambrics, lawns, diapers, diaper-damasks, and cottons. The coaches from Belfast to Armagh pass through it. Population in 1831, 2842, since which time it has much increased.

LYNN-REGIS, or KING'S LYNN; a sea-port town in the county of Norfolk, situated on the right bank of the river Ouse, about eight miles from the sea, and distant from London ninety-six miles N. by E. The town is a mile and a half in length and half a mile in breadth, consisting of two principal streets and several minor ones, which are narrow, but well paved and lighted. Through the town run four small streams, over which there are several bridges. The principal public buildings, exclusive of the churches, are the guildhall or town-hall, an ancient structure of stone and flint, containing several apartments, in which are portraits of the Walpoles and others; adjacent to it, is the bridewell or house of correction; the custom-house, erected in 1683, at the expense of Sir John Turner, thrice mayor, and many years member of parliament for Lynn, it was originally designed as an exchange for merchants; the market-place, an area of about three acres, in the centre of which is a market-cross of freestone, with sculptural and other embellishments; and the theatre, erected in 1813. There is a public walk, called the New Mall, about 340 yards in length, bordered on the sides by quick-set hedges, and having recesses and seats at convenient distances. In the High street is a public library, founded in 1797, and supported by subscription, containing a good collection of useful books; and in 1826 was opened a Mechanics' Literary and Scientific Institution.

The harbour of Lynn is capable of receiving 300 sail of vessels, but is difficult of access from the numerous and perpetually shifting sand-banks in the river. The imports are principally corn, coal, timber, hemp, wine, fruit, &c.; the exports, chiefly agricultural produce, and a fine sand used in making glass. Population of town in 1831, 13,370.

LYON, George Francis, an enterprising traveller, was a native of Chichester, and son of colonel Lyon of that city. He was educated at Dr Burney's naval academy at Gosport, and entered on the books of the royal William flag-ship at Spithead, in 1808. He first sailed in the Milford 74, in Aug. 1809; and, after serving for several months on the French coast, he proceeded to Cadiz in the same ship, and on the 23d of November, 1810, he was engaged in one of the Milford's boats in an attack on several of the enemy's gun vessels near Santa Maria. The Milford left Cadiz in the summer of 1811, and joined the fleet off Toulon; and, as Sir Richard shifted his flag into the Hibernia, a beautiful first-rate, young Lyon was removed into her as a follower of the admiral. Mr Lyon's next ship was the Caledonia 120, bearing the flag of the late lord Exmouth, who shortly afterwards appointed him acting lieutenant of the Berwick seventy-four, captain Edward Brace, under whom he served at the reduction of Genoa, in April 1814. On the 8th of the same month, he was wounded in an attack made by the boats of the Berwick and Rainbow upon the enemy's posts near the pass of Rona, with a view to favour the advance of the British army, under lord William Bentick. During the war with Murat, in 1815, lieutenant Lyon was present at the siege of Gaeta, by the combined Austrian and Anglo-Sicilian forces. On the last day of that year he was appointed to the Albion, seventy-four, fitting for the flag of rear admiral (after Sir Charles) Penrose, in which ship he bore a part at the battle of Algiers, August 27, 1816.

In September, 1818, Mr Ritchie, a gentleman of great science and ability, employed by the British government on a mission to the interior of Africa, arrived at Malta (where the Albion was then lying) attended by M. Dupont, a Frenchman in his pay, whom he had engaged at Marseilles for the purpose of collecting and preparing objects of natural history. It was understood that capt. Frederick Marryat, R. N., was also to have accompanied Mr Ritchie, but that circumstances had occurred which induced that officer to relinquish his intention of joining the mission. Soon after Mr Ritchie's arrival at Valette, he became acquainted with lieutenant Lyon, who, hearing him express his disappointment at having failed to obtain capt. Marryat as his companion on the proposed expedition, offered to supply his place, "hoping that the zeal by which he was actuated, would, in some degree, make amends for his deficiencies in other respects." Mr Ritchie, without hesitation, accepted his proposal, and, in consequence, lost no time in requesting Sir Charles Penrose to solicit the necessary permission for his quitting the Albion. On the 19th of November a favourable answer was received from the admiralty; and lieutenant Lyon, who had employed himself during the interval in acquiring the Arabic alphabet, and in otherwise preparing himself for the object in view, immediately followed Mr Ritchie to Tripoli, where he landed on the 25th of the same month. In 1821, he published his Journal, under the title of "A Narrative of Travels in Northern Africa, accompanied by Geographical Notices of Soudan, and of the Course of the Niger," with a chart of the routes, and a variety of coloured plates, illustrative of the costumes of the several nations of that country. The tour is divided into two parts, the first comprises a journey over the Gharian mountains to Benioleed, and the subsequent progress of the mission from Tripoli to Mourzouk, the capital of Fezzan (lat. 25° 54′ N., long. [illegible]° 52′ E.,) where Mr Ritchie died on the [illegible] of November, 1819; the second embraces Mr Lyon's proceedings between that period and March [illegible], 1820, when he returned to Tripoli, after an absence of exactly one year,—"it being deemed too hazardous to attempt advancing any farther into the interior without fresh authority and additional pecuniary supplies from Government." During this period lieutenant Lyon wore the dress of a Moslem, kept his head shaved, allowed his beard to grow, and travelled under the name of Said-ben-abd-Allah.

After his return to England, capt. Lyon was promoted to the command of the Hecla bomb vessel, then fitting out at Deptford, for the purpose of exploring Repulse Bay, &c. in company with, and under the orders of capt. Parry. The expedition sailed from the Nore on the [illegible] May, 1821, and remained out during the whole of two seasons; after which they returned home in October, 1823, their partial success in having made considerable additions to the geographical and scientific history of the North Sea, receiving very warm testimonies of the public approbation. Captain Parry's history of the expedition is well known. Captain Lyon's "Private Journal" was also published, and has been aptly termed "The Sayings and Doings of the Esquimaux." He was rewarded with post rank, dated Nov 1[illegible], [illegible], and on the 16th of Jan. he was presented with the freedom of his native city of Chichester, and entertained by the corporation at a public dinner. The freedom was enclosed in an oaken box, turned from a portion of the Hecla, lined with gold, and bearing the following inscription:—"Presented, Jan. 16, 1824, by the mayor, aldermen, and citizens of Chichester, to George Francis Lyon, Esq. Captain in the Royal Navy, in testimony of admiration of the zeal, perseverance, and spirit of enterprise displayed by him in his travels in Northern Africa, and in the late voyage to the Polar Sea, in search of a north-west passage."

A few days before this gratifying circumstance, capt. Lyon had been appointed to the Griper, then fitting out for another voyage of discovery to the icy regions. This vessel was originally a gun-brig of only 180 tons burthen; but she had been considerably strengthened and raised upon, to enable her to accompany lieutenant Parry in the expedition of 1819; and her complement now consisted of forty-one persons, including capt. Lyon. She sailed from the Nore on the [illegible] of June, [illegible] for the purpose of making an attempt to [illegible] the western shore of Melville Peninsula with the important discoveries of capt. Franklin; and was accompanied as far as the coast of Labrador by the Snap surveying vessel, which had been ordered to carry out a spare bower-anchor and part of her stores. After undergoing many hardships in the course of an exploratory voyage, the Griper returned to England in November of the same year. Capt. Lyon published a narrative of his voyage, with a reduced chart of his route, and an appendix, containing magnetic and botanical observations. In June 1825, the honorary degree of D. C. L. was conferred upon him by the university of Oxford; and, on the 5th of Sept. following, he married Lucy Louisa, the younger daughter of lord Edward Fitzgerald. Not long after, he went to Mexico, as one of the commissioners of the Real del Monte mining company. Returning home, by way of New York, in the Panthea packet, bound to Liverpol, he was wrecked in a gale at Holyhead, Jan. 14, 1827, and lost every thing belonging to him, including his journal, plans of the mines, &c. To add to his mortification, he heard, upon landing, of the death of his wife, which had taken place about four months before.

Captain Lyon afterwards returned to South America on mining business, which he prosecuted with his wonted intelligence; and the specimens of South American minerals which he forwarded to this country are evidences of his taste. At ength his sight began to fail him to an alarming degree, insomuch that he determined to revisit England for advice. He accordingly embarked for that purpose, but died, on board his Majesty's packet the Emulous, on her passage from Buenos Ayres, Oct. 8th, 1832, at the age of thirty-seven; hus prematurely concluding a life of extraordinary dventure, attended by extraordinary misfortunes.

LYON-KING-AT-ARMS; an officer of great ntiquity in Scotland, so called from the armorial earing of the Scottish kings, the lion rampant. The Lord Lyon's rank is superior to that of any ther king of arms, as he holds his office immediately from the sovereign, by commission under the reat seal. Formerly, one of his duties was to rry public messages to foreign states. The fficers serving under him are heralds, pursuivants, d messengers. They are all created by him, d amenable to his jurisdiction. He is empowered inspect the arms and ensigns-armorial of all the blemen and gentlemen in the kingdom, and to ve proper arms to deserving persons; to matriculate such arms, and to fine those who use arms hich are not matriculated in £100 Scots, with e forfeiture of the goods and furniture on which e arms are represented. The court of session s the power of reviewing the decision of the on Court as to the matriculation of arms, but a luction of a matriculation of arms is incompetent the instance of a party who does not claim right the arms in question. The regalia of this cer are very sumptuous, and are worn on solemn asions. Before the revolution, on his admission office, he was solemnly crowned by the sovereign or his commissioner, in presence of the nobility, &c. The Scottish poet, Sir David Lindsay he Mount, was lord-lyon king-at-arms.

LYRE-BIRD, or **MENURA**, a beautiful bird nd in Australia, and placed by some naturalists ng the gallenaceous order of birds; by others, ng the passerine. It equals a common pheasant ize, but its limbs are longer in proportion, and its feet much larger; the toes are armed with large arched blunt claws; the hind toe is as long as are the fore toes (the length of these being nearly equal), but its claw is larger than that of any of the others; the scales of the tarsi and toes are large bold plates, and their colour is glossy black; the head is small, the beak, as Cuvier has described it, is triangular at the base, pointed and compressed at the tip; in the male the feathers of the head are elongated into a crest; the wings are short, concave, and rounded, and the quill feathers are lax and feeble; the general plumage is full, deep, soft, and downy. The tail is modified into a beautiful long plume-like ornament, representing, when erect and expanded, the figure of a lyre, whence the name of lyre-bird. This ornamental tail is, however, confined to the male. In the female the tail is long and graduated, and the feathers are perfectly webbed on both sides of the shaft, although their texture is soft and flowing. In the male the tail consists of sixteen feathers, of these the outer one on each side is broadly but loosely webbed within, its outer web being narrow; as it proceeds it curves outwards, bends in, and again turns boldly outwards and downwards, both together resembling the framework of an ancient lyre, of which the intermediate feathers are the strings; these feathers, except the two central, which are truly but narrowly webbed on the outer side, consist each of a slender shaft, with long filamentous bubules, at a distance from each other, and springing out alternately. The appearance of these feathers, the length of which is about two feet, is peculiarly graceful; their colour is amber brown, but the two outer tail-feathers are gray tipped with black, edged with rufous, and transversely marked on the inner web with transparent, triangular bars. The general plumage of the menura is amber brown above, tinged with olive, and merging into rufous on the wings, and also on the throat. The under parts are ashy gray. With respect to the habits of the lyre-bird much yet remains to be known. Shaw, in the account he collected, observes that its powers of song are very great:—"At the early part of the morning it begins to sing, having a very fine natural note; and gradually ascending some rocky eminence, scratches up the ground in the manner of some of the pheasant tribe, elevating its tail, and at intervals imitating the notes of every other bird within hearing; and having continued this exercise for about two hours, again descends into the valleys or lower grounds."

It is in the hilly districts of Australia that the menura is to be found, and its manners are shy and recluse; it is almost exclusively terrestrial, seldom taking wing, and when forced to do so flying with labour and difficulty. Dr Latham remarks, "It is said that it will frequently imitate the notes of other birds so as to deceive most people;" and we may here add that the musical powers of this bird, which we have been inclined to doubt, have been confirmed to us by the testimony of a gentleman who, during his residence in Australia, had many opportunities of gaining information on the subject, and he assured us that not only were its own notes rich and melodious, but that it imitated those of other birds with surprising tact and execution. Mr George Bennett, however, who notices the menura, in his "Wanderings in New South Wales," does not allude to this circumstance, one of considerable importance;

he neither confirms the statements of Shaw and others respecting its powers of song, nor refutes them as erroneous. His information is nevertheless interesting. The native names of the menura, according to this gentleman, are "béleck béleck," and "balangara;" it is common in the mountain ranges in all parts of the colony of New South Wales, but it has been much thinned in its numbers in some districts, in consequence of the tail-feathers of the male being saleable at Sydney, where they are highly valued. In the ranges of the Illawarra district, where it once abounded, the menura is very rare. "The lyre-bird," observes Mr Bennett, "is a bird of heavy flight, but swift of foot. On catching a glimpse of the sportsman, it runs with rapidity, aided by the wings, over logs of woods, rocks, or any obstruction to its progress; it seldom flies into trees except to roost, and then rises only from branch to branch. They build in old hollow trunks of trees which are lying upon the ground, or in the holes of rocks; the nest is merely formed of dried grass, or dried leaves scraped together; the female lays from twelve to sixteen eggs, of a white colour, with a few scattered light blue spots; the young are difficult to catch, as they run with rapidity, concealing themselves among the rocks and bushes. The lyre-pheasant, on descending from high trees, on which it perches, has been seen to fly some distance; it is more often observed during the early hours of the morning and in the evening, than during the heat of the day. Like all the *gallinaceous tribe*, it scratches about the ground and roots of trees, to pick up seeds, insects, &c. The aborigines decorate their greasy locks, in addition to the emu feathers, with the splendid tail-feathers of this bird when they can procure them." Dr Latham says, "I do not find that it has been yet attempted whether this bird will bear confinement; but if the trial should turn out successful, it would be a fine acquisition to our menageries." This hint has, we believe, never been acted upon; the lyre-bird has not as yet been conveyed alive to Europe.

LYSONS, Rev. Daniel, F.R.S. F.A.S. F.H.S. F.L.S., &c., was born on the 28th of April, 1762. His father, the Rev. Samuel Lysons, was incumbent of Rodmarton, near Cirencester. Having completed his early studies at Bath, Mr Lysons graduated at St Mary Hall, Oxford. On taking orders in 1784, he commenced his clerical life as curate to his maternal uncle, Mr Peach, of Mortlake, in Surrey. Shortly afterwards he preached by appointment, and according to custom, published, the annual sermon for the Colston charity at Bristol. In 1789 he removed to Putney, as curate to the Rev. Dr (then Mr) Hughes, preceptor to the royal family, and afterwards canon residentiary of St Paul's, in whom he found an enlightened and congenial friend. Having conceived the project of writing a topographical work on the environs of London, Mr Lysons, at that time possessed a limited income, and unknown to the leading London booksellers, was at first deterred by considerations of risk and expense. Averse to the idea of publishing by subscription, he resolved on accepting the proffered loan of £200 from Mr Hughes and another friend; determining to supply the deficiencies consequent on so small a fund by labour and diligence. In the illustration of his work he was aided by the pencil of his brother Samuel, whose etchings, executed from drawings taken by himself, were remarkable for their masterly accuracy. The first edition of "The Environs of London" was published in the year 1792, and met with the most flattering reception from the public. Its rapid and extensive sale soon enabled the author to repay his friends their timely loan, and to realize a considerable sum to himself. In 1800 Mr Lysons, on account of his father's declining health, resigned the cure of Putney, and undertook that of Rodmarton and [illegible]renton. In 1804 the death of his father put him in possession of the living of Rodmarton, as well as the family property of Hempsted, inherited from an elder uncle. The increase of means and leisure soon suggested to his mind the commencement of a project which, in concert with his brother Samuel, he had entertained since the publication of "The Environs of London," and for which during four years, they had made the necessary collections. This work, "The Magna Britannia," comprised in its design the topographical history of the several counties of England in alphabetical order. In the arrangement of the different departments of this voluminous undertaking, the great mass of necessary correspondence fell on the elder brother; and the whole of the general, parochial, and family history was also furnished by him. No sheet, however, was printed without being subjected to the joint revision of the brothers. The first part of the Britannia, comprising Bedfordshire, was published in 1806. In 1819 Mr Lysons sustained a severe blow in the death of his brother Samuel. The work had now reached, in alphabetical order, the county of Devon, every parish of which the two brothers had personally visited in order to complete their materials. Considering himself pledged to the completion of this volume, he persevered so far in a task rendered [illegible] to him by distressing recollections, but abandoned the idea of carrying his project farther. In his brother, warmly attached to him from childhood, and associated in all his plans and feelings, he had lost a coadjutor and friend not to be replaced; and the infirmities of middle age, aggravated perhaps by mental and bodily exertion, had begun to tell on a frame and spirits originally robust. The future prosecution of the work was therefore abandoned for less fatiguing but more important duties. Each county, however, of the Britannia may be considered as a separate topographical history in itself, and is in fact sold as a separate work. In [illegible] Mr Lysons published a history of the origin and progress of the meeting of the three choirs of Gloucester, Worcester, and Hereford, and of the charity connected with it. To impart to his publication more than a merely local interest, he prefixed to it a history of the parochial clergy from the earliest times, containing much valuable information; and which was, at the desire of his friends, reprinted and sold as a separate work. In 1818, he published a selection of sermons from the works of Jeremy Taylor, containing those passages peculiarly marked by beauty of thought and expression, and omitting whatever seemed unsuitable to the present day. To the volume in question were prefixed three sermons of his own, preached on different public occasions. He died on the 3d Jan. 1834. He was twice married, and left a family.

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MACADAM, John Loudon, the great improver of roads, whose improvements, however, are likely to be to a large extent superseded by the general adoption of railways, was the representative of an old and respectable landed family—the Macadams of Waterhead, in the stewartry of Kirkcudbright. He was born, September 21, 1756, in the town of Ayr and received his education at the school of *Maybole*. On the death of his father in 1770, when he was only fourteen years of age, he was sent to New York, where his uncle William, a younger brother of his father, had been settled for some years as a merchant. Here he remained fourteen years, during which the war of independence took place. Under the protection of the British forces, who possessed the city, he realized a considerable fortune, as an agent for the sale of prizes. At the conclusion of the war, he returned, with the loss of nearly the whole of his property, to his native country, and resided for some time at *Dumcrieff*, a beautiful place in the neighbourhood of Moffat, subsequently the seat of Dr Currie, the biographer of Burns. He afterwards lived for thirteen years at Sauchrie in Ayrshire, where he was in the commission of the peace and a deputy lieutenant. During this period, he enjoyed the society of his first wife—a lady named Nichol, whom he had married at New York, and who brought him three sons and three daughters. He married secondly, in 1827, Miss de Lancey.

In 1798, Mr Macadam received the government appointment of agent for victualling the navy in the western parts of Great Britain, and removed to Falmouth. He subsequently resided for many years at Bristol, and latterly at Hoddesdon in Hertfordshire. It was while acting as one of the trustees upon certain roads in Ayrshire, that he first turned his attention seriously to the mechanical principles involved in that branch of national economy. While engaged in England in duties of an entirely different kind, he continued silently to study the process of road-making in all its details, keeping particularly in view the great desiderata of a compact and durable substance and a smooth surface. By the exertions of various able engineers, who had turned their attention to road-making, the highways of Great Britain were already in the course of a rapid improvement; but Mr Macadam was the first to point out and prove, in practical operation, that a bed, of a few inches in depth, formed of fragments of primitive rock—granite, greenstone, or basalt—small enough to pass *through* a ring not larger than two inches and a half in diameter, was the best material for ordinary roads. His system, in its leading features, is so *conspicuously* displayed in the public eye, that any minute account of it would be superfluous. It was not till 1815, when on the borders of sixty, that he began to devote his whole mind to the business of road-making. Being then appointed surveyor-general of the Bristol roads, he had at length full opportunities of exemplifying his system, which he forthwith proceeded to do in a manner that attracted general attention, and caused it to be quickly followed throughout the whole kingdom. In 1823, he was examined before a committee of the House of Commons respecting the propriety of converting the ruble granite causeway of the principal thoroughfares, into a smooth pavement resembling those which he had already formed on the principal roads. He expressed himself as decidedly of opinion that such a change should be made: "I consider," said he, "that the expenses would be materially reduced; the convenience of passing over the surface would be generally facilitated, particularly in the leading streets; and the same weight of stone, now put upon those streets as pavement, would be obtained at infinitely less expense, in a different form, for the purpose of road-making." The consequence was, that, in London, Edinburgh, and Dublin, some of the principal lines of street, which had previously been remarkable for solidity of pavement, as well as the large sums that pavement had cost, were—to use a phrase already familiar to every ear—*Macadamised*. In introducing this improvement into British roads, Mr Macadam had spent several thousand pounds from his own resources. In 1825, he proved this expenditure before a committee of the House of Commons, when an equivalent sum was voted to him, besides an honorary tribute of two thousand pounds, in consideration of the public benefits resulting from his labours. The inadequacy of this remuneration is very striking, when contrasted with the merit of bringing into operation a mechanical improvement, the consequences of which, in saving animal labour, facilitating commercial intercourse, and rendering travelling easy, quiet, and pleasant, are beyond all calculation. Mr Macadam, however, never made money an object, but, on the contrary, rejected on principle many opportunities of gathering wealth, which his office as a superintendant opened up to him, and which many men of by no means blunt feelings as to professional propriety would have taken advantage of. He therefore died a poor, but, as he expressed himself, "at least an honest man." His decease took place, November 26, 1836, at Moffat. In private life he was as eminent for his amiable and upright character, as, in the world, for that sagacity and application which became the source of such important benefits to his fellow-creatures. Entirely devoid of selfish feeling, he was the charm of the private circle, by his gentle and polished manners, and the ease and promptitude with which he imparted the stores of a powerful and well-informed mind.

MACCLESFIELD; a town of England, in the county palatine of Cheshire, nineteen miles from Manchester, and 167 from London. It is situated at the border of the forest to which it gives name, at a short distance westward of the river Jordan or Bollin, which falls into the Mersey. It was incorporated by a charter of prince Edward, the son of Henry III., as earl of Chester, in 1261; and subsequent charters were bestowed on it by Edward

III. and other sovereigns. Under the new municipal act the town is governed by a mayor, twelve aldermen and thirty-six councillors—the corporate body being styled the "mayor, aldermen and burgesses of the borough of Macclesfield." The town is divided into six wards. A court leet for the hundred and forest of Macclesfield is held, and a court of record for the trial of civil causes, four times a year. The reform bill also confers upon Macclesfield, with the townships of Sutton and Hurdesfield, the privilege of sending two members to parliament. Macclesfield consists of four principal streets, diverging from the market-place. It is supplied with water conducted in pipes from the adjoining hills, and lighted with gas. The principal trade of the place formerly was the making of twist buttons; but this has been superseded by the manufacture of silk in its various textures; and the magnitude and number of the factories exhibit the extent to which this important and beautiful branch of trade is carried on. Every variety of silk article, from the narrowest ribbon to silk handkerchiefs, satins, and gros de Naples, is manufactured here; there are also several cotton factories at Macclesfield. The river Jordan, or Bollin, runs through the lower part of the town, and, though the stream is inconsiderable, it turns several mills. The vicinity of Macclesfield yields abundance of coal, slate and stone. A canal to the east of the town gives a water communication with Manchester, and, by means of the Grand Trunk canal, with London also. A railway communication with Stockport will afford still greater facilities of intercourse with Manchester and Liverpool; while the railway to Crewe, and another through Newcastle and the Potteries, both of which branch at Nether Alderley, about six miles hence, present means of transit to other large towns. Population of Macclesfield in 1801, 8743; in 1831, 23,129. United population of Macclesfield, Sutton, and Hurdesfield, in 1831, 32,068.

M'CULLOCH, JOHN, M.D. F.R.S., F.L.S., and F.G.S., an eminent mineralogist, was born in Guernsey, on the 6th of October, 1773. His family was, as the name imports, Scotch; their estate and baronial castle were at Cardoness, on the river Fleet, in Kirkcudbright. The first school he was sent to was the grammar school at Plympton; afterwards to one at Penzance; and thence, in 1787, to the grammar school at Lostwithiel, in Cornwall, where he remained for three years. From Lostwithiel he went, in 1790, to prosecute his medical studies at Edinburgh, where he obtained his diploma of physician at the early age of eighteen. He resided five years at Edinburgh, when, feeling that he was by far too young to be likely to commence private practice with success, he entered the artillery as assistant-surgeon. On the 5th of April, 1803, he accepted the situation of chemist to the ordnance, which was more particularly agreeable to him as it exempted him from taking the routine duty in the colonies. In 1807 he resided at Blackheath, and practised as a physician.

About the year 1811, the surveys in Scotland commenced, in which he was engaged. This compelled him to give up both his profession and the appointment under the board of ordnance. He never resumed his practice, though he was frequently consulted, and was ever ready to give his advice when called upon. The first business on which he was employed in Scotland, was in a search for stones adapted to the use of the government powder-mills. The second business on which he was employed, was an examination of the Grampian mountains, with a view to the repetition of the experiments that had been made at Schehallien on the density of the earth. The third had for its object the correction of the deviations of the plumb-line on the meridian of the trigonometrical survey. Whilst he was making these surveys, he was also employed in geological observations, and in collecting materials for a mineralogical map, as well for his own amusement and instruction, as with the hope that they would become useful to the country at some future time. In 1826 he was desired by goverment to complete the work he had thus begun; and this was the commencement of the last and most important public work in which he was engaged,—the mineralogical and geological survey of Scotland,—which was continued every summer from 1826 to 1832, when he completed it. He received from government for this survey £7000—a sum, not by any means too large for the services he rendered. Some of the fruits of his separate surveys are before the public. The first was "A Description of the Western Islands of Scotland, including the Isle of Man," &c. 2 vols. 8vo., with 1 vol. 4to. of plates. London and Edinburgh, 1819; Next, "A Geological Classification of Rocks, with Descriptive Synopses, comprising the Elements of Practical Geology." London, 1821, 1 vol. 8vo. Thirdly, "The Highlands and Western Isles of Scotland, in a series of letters to Sir Walter Scott, bart." London, 1824, 4 vols. 8vo. Fourthly, "A System of Geology, with a Theory of the Earth, and an Explanation of its Connection with the Sacred Records." London, 1831, 2 vols. 8vo. In addition to these large works, which arose out of his employment, he published an account of Blair and Dunkeld, anonymously, in 1823; and contributed many papers both to the Edinburgh Encyclopaedia, and to Brewster's Journal, on various subjects connected with Scotland generally, or its rocks and minerals, besides others on different topics.

In 1821, Dr M'Culloch published a Treatise on the Art of making Wines, which reached to a fourth edition in 1829. Two other works of his appeared in 1827 and 1828. The first is entitled "Malaria, an Essay on the Production and Propagation of this Poison, and on the Nature and Localities of the places by which it is produced," &c. 1 vol. 8vo. London. The second is "An Essay on the Remittent and Intermittent Diseases, including generally Marsh Fever and Neuralgia," &c. in 2 vols. 8vo. London. For some years, before his death, he filled the situation of lecturer on chemistry and geology at the honourable East India Company's military establishment at Addiscombe. His appointment of physician in ordinary to prince Leopold dates from 1820. He married in the course of the summer of 1835, Miss White, whose family resided near Addiscombe. He was with her in Cornwall, on a visit to the Rev. Mr Buller, at St Just, when he fell out of a pony phaeton, by which, in addition to other injuries, his right leg was so shattered, that amputation became necessary. This accident terminated his life on the 21st August, 1835. Dr M'Culloch left a variety of unpublished papers, and among others a large work on Natural Theology. He was steady in his attachments, zealous to promote the interests of his friends, and ever ready to aid those who needed his assistance. He possessed very strong [illegible] and acute sensibility. His manners were courteous; his conversation was rich, varied, and remarkable for its unaffected simplicity.

MACDONALD, John, formerly lieutenant-colonel of the royal Clan-Alpine regiment, was the only son of the celebrated Flora Macdonald, who so materially assisted prince Charles in evading the English soldiery, in 1746. It is stated in the account of the rebellion, published under the title of "Ascanius," that she was the daughter of Mr Macdonald, a tacksman or gentleman farmer, of Melton, in South Uist, and was, in 1746, about twenty-four years old. It is also said that her portrait was painted in London, in 1747, for commodore Smith, in whose ship she had been brought prisoner from Scotland. Mr Croker adds, in his edition of Boswell's Johnson, that he has not been able to trace that portrait; but it may be remarked that there are four prints of this celebrated lady: one a mezzotint, by M'Ardell, from A. Ramsay; another mezzotint, by J. Faber, 1747, from T. Hudson; and a third, engraved by Johnson; and a large portrait, published in 1827, by T. Lupton, from a painting by J. Goubaud. In Dr Johnson's letter to Mrs Thrale, in 1773, in which he describes his visit to Flora Macdonald, it is stated, "She and her husband are poor, and are going to try their fortune in America." Mr Croker remarks that they did emigrate to America; but returned to Skye, where she died, on the 4th of March, 1790, leaving a son, colonel John Macdonald; and a daughter, married to a Macleod in Skye. The son, John Macdonald, ssed many years in the service of the East India Company, and attained the rank of captain in the corps of Engineers on the Bengal establishment. In he years 1794, 1795, and 1796, he carried on, at Bencoolen, in Sumatra, and at St Helena, a continued ries of observations on the diurnal variation of the agnetic needle, which he communicated, in 1798, o the royal society, and which were afterwards ublished in the Philosophical Transactions. He was lected a fellow of the royal society in 1800. About at time he returned to England, and was appointed eutenant-colonel of the royal Clan-Alpine regiment, and commandant of the royal Edinburgh artillery. He was for some time stationed in Ireland. In 1803 he published, in two volumes 12mo, Rules and Regulations for the Field Exercise and anoeuvres of the French Infantry, issued Aug. 1, 91; translated from the French, with explanatory notes, and illustrative references to the British d Prussian systems of Tactics," &c. In the llowing year, when he belonged to the 1st battalion of Cinque Ports volunteers, he published other similar work, entitled "The Experienced ficer; or, Instructions by the General of Division, impffen, to his Sons, and to all young Men intended for the military profession; being a series rules laid down by General Wimpffen, to enable cers of every rank to carry on war, in all its nches and descriptions, from the least important erprises, and expeditions, to the decisive battles ich involve the fate of empires. With notes, an introduction." In 1807, being then chief gineer at Fort Marlborough, he published two e volumes, translated from the French, with explanatory notes, of "Instructions for the Conduct Infantry on actual Service." His last work of nature was a translation of "The Formations Manoeuvres of Infantry, by the Chevalier eil," 1812, 12mo. In 1811, he published, in , an essay on harmonics, under the title of "A Treatise, explanatory of the Principles constituting the Practice and Theory of the Violoncello."

Another subject which colonel Macdonald for many years ardently pursued, was that of conveying intelligence by telegraphs. In 1808, he published in 8vo. "A Treatise on Telegraphic Communication, naval, military, and political." In this he proposes a new telegraphic system; and, in 1816, he issued a Telegraphic Dictionary, extending to 150,000 words, phrases, and sentences. The directors of the East India Company liberally granted £400 towards its publication; and the colonel received testimonials to the utility of his plans from Mr Secretary Barrow, of the admiralty, and Sir Harry Calvert, adjutant-general. But the most favourite subject of his scientific researches, was the magnetic Poles and the variation of the Magnet; which, as we have before noticed, was that of his first published labours in the Philosophical Transactions. On this topic he contributed no less than sixteen letters to the Gentleman's Magazine. To the same miscellany he also contributed a vast number of articles on various subjects. He died at Exeter, where he had resided for twelve or fifteen years, on the 16th August, 1831, aged seventy-two.

M'GAVIN, William, author of "The Protestant," a controversial work on the leading doctrines of the church of Rome, was born August 12th, 1773, on the farm of Darnlaw, in the parish of Auchinleck, Ayrshire, which his father held on lease from lord Auchinleck, and afterwards from his son James Boswell, the biographer of Johnson. A short attendance at the school of that parish, when about seven years of age, constituted the whole education of a regular kind, which he ever enjoyed. His parents having removed in 1783 to Paisley, and being in by no means affluent circumstances, he was sent at an early period of life to earn his bread as a draw-boy in one of the manufactories. Subsequently he tried weaving of silk, but eventually was led by his taste for reading to become apprentice to Mr John Neilson, printer and bookseller; a situation highly congenial to his taste, and which afforded him the means of cultivating his mind to a considerable extent. The duty of reading proof-sheets in his master's shop was the circumstance which first led him to study the English language carefully; and, considering the limited nature of his education, it is surprising that he should have been able to attract notice as an author under the age of twenty. In 1793, having left Mr Neilson's shop, he was found qualified to assist his elder brother in the management of a school, where writing, arithmetic, and mathematics were taught. Of this seminary he afterwards became sole master; but he ultimately abandoned teaching as a pursuit not agreeable to his genius or temper, and in 1798, was engaged as book-keeper and clerk by Mr David Lamb, an American cotton merchant, to whose two sons he at the same time acted as tutor. Some years afterwards, on Mr Lamb removing to America, Mr M'Gavin became his partner; the business was carried on in Glasgow. In 1805, Mr M'Gavin married Miss Isabella Campbell of Paisley. As his business was of a light nature, and Mrs M'Gavin brought him no children, he enjoyed more leisure for the cultivation of his mind than falls to the lot of most merchants in the busy capital of the west of Scotland. At a later period, after the death of his original patron, he entered into partnership with the son of that gentleman, and carried on what is called a West India business, under the firm of M'Gavin and Lamb. This ultimately proving unprofitable, he was induced, in 1822, to undertake the Glasgow agency of the British Linen Company's bank, which he conducted without intermission till his death. Being a man of uncommon industry, and equally great benevolence, Mr M'Gavin found time, amidst his numerous mercantile avocations, to write a number of religious tracts and stories, for the improvement of the poorer and junior classes of society. Though these productions are of a class which do not usually attain a high place in literature, no reader, however indifferent to the subjects, or of however highly cultivated intellect, could peruse them, without remarking the extraordinary conciseness of style and moral force by which they are characterized. The most distinguished of all Mr M'Gavin's writings is his "Protestant," a series of papers, designed to expose the errors of the church of Rome, commenced in 1818, and finished in 1822. These obtained a high degree of celebrity at the time of their publication, and are still held in great estimation. In 1827, he superintended a new and improved edition of "The Scots Worthies," to which he added notes. He soon after published a refutation of the peculiar views of Mr Cobbett in his History of the Reformation; and a similar exposure of the principles of Mr Robert Owen. He also published a pamphlet, entitled "Church Establishments considered: in a Series of Letters to a Covenanter." Not long before his death, he superintended a new and improved edition of Knox's History of the Reformation; and aided with an introduction, a work by the Rev. Mr John Brown of Whitburn, entitled "Memorials of the Nonconformist Ministers of the Seventeenth Century." In the midst of his divers labours, he suddenly died of apoplexy, Aug. 23, 1832.

MACHINERY, EFFECTS OF, (*a.* to article *Labour-Saving Machines.*) In the earliest ages of society, machinery was unknown. Man was created in a climate where the earth yielded bountifully at all seasons of the year, her productions for his use. Then, his only labour was to gather from nature's abundant store, the supply of his present want. Afterwards, he began to cultivate the soil, and then, probably, some simple instrument of culture was invented. At a still later period, his Creator invested him with dominion over the life of living creatures; and, to enable himself to exercise this new authority, he invented, also, rude instruments of hunting and fishing. These are all arts of absolute necessity. Without them, man could not exist, except in the mildest climates, and there only in small numbers. Beyond these arts, a large proportion of the human race have made no great advances. The only additional skill, yet attained by many tribes of the human family, —the skill to make rude clothing and to build rude huts to protect them from the inclemency of the weather,—has been taught them by stern necessity. In their circumstances, each individual of the society must labour for his own subsistence, and all hope of intellectual or moral improvement seems entirely cut off.

From time to time, however, in different parts of the world, there have been communities, which have risen far above this condition. Assyria, Persia, Egypt, Greece and Rome felt, by turns, the genial influence of improvement. And it is worthy of remark, that, wherever, over the whole earth, the light of civilization has once dawned, some rays of that light linger yet,—the utter darkness of absolute barbarism has never returned. It cannot wholly return. The law of man's nature, impressed on him by his God, is onward progress; and let a nation but once rise into the light of civilization, and then, however low adverse circumstances may afterwards thrust them down, they will never sink into utter night, nor will they ever cease to strive to re-ascend to day. It is also worthy of remark, as illustrative of this law, that these nations made different degrees of progress, and that each advanced farther in improvement than the preceding. The light shone faintest, where it first dawned, on Assyria,—its brightest effulgence illuminated Rome. It was a progressive illumination,—faint and hardly perceptible at first,—then gradually receiving greater and greater accessions of splendour. Now in our day, it has flashed out into a broad, bright, and glorious effulgence, encompassing and illuminating more than half the globe.

Civilization never takes place without the accumulation of the material products of labour. Different causes may produce this accumulation. The hand of violence may gather the spoils of rapine, and manual labour or mechanical contrivance may heap up the store of industry. The two first of these causes, but more particularly the first, procured an abundance of the necessaries and luxuries of life to the states of antiquity; and were, therefore, the principal agents in the work of civilizing those states. Mechanical contrivances exerted a similar, but, at first, almost imperceptible influence, increasing the stores of wealth, and thus helping forward the progress of civilization. The experiment of machinery, however, as a substitute for human labour, employed in producing and increasing the comforts of life, was never tried on a great scale by the nations of antiquity. That was reserved to be the distinction of modern times. The glory of compelling the powers of nature into the service of man, was destined to grace our own age. And, as the spoils of these bloodless victories have been far greater than ancient conquest ever gained,—as the accumulation of wealth by the new agents that have been employed in the task, has been far more rapid than was ever known in former times, through the instrumentality of any agent whatever, so civilization has, in these later days, spread far more widely, and penetrated much more deeply, than ever before; reaching, not one nation only, but many, and bestowing its invaluable benefits, not upon a favoured portion merely, but upon the whole of society. We would not say that machinery has been the only efficient agent of modern civilization. We do not so believe. There have been moral agents at work. They have effected much; but without the aid of machinery, they could not have effected much. What we claim for machinery is, that it is in modern times by far the most efficient physical cause of human improvement; that it does for civilization, what conquest and human labour formerly did, and accomplishes incalculably more than they accomplished. And how different are the characters of these three agents! [illegible] the direst curse of humanity, must necessarily precede conquest; and the structure of civilization reared by this agent, rises upon the spoil, the desolation, and the anguish of the conquered. [illegible] labour, when urged to excessive efforts, [illegible] necessarily, to a considerable extent, prevent [illegible] lectual and moral improvement. But machinery, doing the work, without feeling the wants of man; taking from none, yet giving to all, produces almost unmingled benefit, to an amount and extent, of which we have as yet, probably, but a very faint conception.

There are several objections to this general view of the effects of machinery, which we shall now examine. The first and principal one is, that, all labour saving inventions diminish the demand for human industry, and consequently, deprive multitudes of labourers of employment. We meet this objection by denying the fact. It is not true, that the demand for human industry is diminished. It is not true, that multitudes of labourers are absolutely deprived of employment. It is true, however, that many labourers are sometimes compelled to change their employment, by the introduction of new and improved machinery into a branch of industry, where a great deal of human labour had been previously required. And it is true, that sometimes, while this change is in progress, a great deal of suffering is experienced. All this we shall *attempt* to explain.

The earth is the great primary source of the supply of human wants. It is the great laboratory, *where the* dust we tread upon is converted into life-sustaining nutriment. Whatever we eat, or drink, or wear, comes originally from her bosom. In *the earliest* stages of society, as has been already said, men consume her productions in their simple state. The springs supply them with water to drink. They eat the fruits of the field, and clothe themselves with leaves and skins. In this savage state, each one supplies his own wants, and it takes all *his* time to do it. But, after a while, some one more lazy or more ingenious than the rest, discovers some method of lightening his individual labour. Then others imitate him;—and, in time, machines are invented, that seem likely to supersede the necessity of human labour altogether. This would, in fact, be the result, if, in this condition of things, men should consume no more of the products of industry than before; and, of course, multitude who had been actively employed would e employed no longer. But such is not the fact. he cravings of desire are never satisfied. Exnd the supply as you may, the wish for the enyments of life will still go beyond it, and will find s only limit in the means of gratification. The ly effect, therefore, of increasing the productive ergies of labour, by the introduction of machiny, is to distribute it into more numerous departents. In the savage state, all were hunters and hers; in the civilized state some cultivate the ound, some construct machines, some make clothg, some build houses, some make laws, and some each sermons. Each fills his appropriate place, e amount and the products of human industry e incalculably increased, and the action of the nt social system goes on safely and harmonly.

The effect of machinery upon labour may be iltrated by an example. We will take the printg-press. It is difficult to conceive what was the dition of society, when there was no printing. can almost as easily imagine the condition of world, when there was no light. Yet we know t there was such a time. Then the copyist formed the printer's work. Books were pub-hed by copying them out with a pen. A consid-ble number of persons were employed in this business, and a considerable number more found employment in the preparation of the materials for copying. Books published in this way were, of course, very expensive. The whole annual income of a man in moderate circumstances would hardly buy a Bible. None but princes and very rich men could afford to purchase libraries. Hence, the demand for books was extremely limited, and the number of persons employed in furnishing them, must have been regulated by the state of the demand.

When the printing-press was introduced, an extensive change took place. Books were multiplied. The price fell. Readers became more numerous. The demand for information became more urgent. Knowledge began to diffuse her healing beams every where, and an impulse was given to society, that has ever since continued to grow in energy and power. But this is not the result,—though an important and a glorious one,—that claims our consideration now. What we would now press upon the attention of our readers, is the effect of this machinery upon human industry. Is there more or less of human labour employed in furnishing books, since the press has lent its mighty aid to the work, than before? Where was then one author, there are now, at least, one hundred. It has been calculated that in Germany, one out of every hundred of the whole population, is an author. Instead of a few hundred copyists, and a few hundred manufacturers of materials for copying, there are thousands and tens of thousands of persons, who obtain a living by making types, presses, and paper, by printing books, by binding them when they are printed, and by selling them when they are bound. It is no exaggeration to say, that this business employs many hundred times as much human labour, as it did before the printing-press was invented.

In this instance, then, the demand for human industry has not ceased nor diminished, but is greatly augmented in consequence of the introduction of machinery. Nor does it seem to be possible that any other effect than this can be produced, until every department of industry,—when industry shall have subdivided itself into the greatest possible number of departments, whether moral, intellectual, or physical,—shall be overstocked, and every want of man more than supplied. This can happen only when man shall cease to improve;—a period, to which no philanthropist would wish to look forward.

But if this be so, some may urge, why is it that almost every where, when machinery has been introduced on a large scale, the working classes have uniformly evinced dissatisfaction and hostility? Why did they destroy the spinning-jennies in Normandy, and the threshing machines in England? Why did the printers of Paris, after the revolution of 1830, go about destroying the steam-presses? Why did they petition the legislature, that their use might be prohibited by law? The obvious answer to all questions of this sort is, that the working classes, especially of Europe, are not apt to distinguish between present inconvenience and permanent evil. They are not very far-sighted. They do see and feel the drenching and pelting storm; but they do not see, even in remote anticipation, the renovated beauty of nature, when the storm has gone by. No well-informed person ever denied, that the introduction of machinery may occasion temporary inconvenience. If a man, who has been accustomed to employ twenty workmen, procure a machine, which, with the aid of one, will do the work of the twenty, nineteen, of course, must be deprived of employment. When this takes place on a small scale, the inconvenience is not great. The little labour that is turned out of its accustomed channels, is almost immediately absorbed by other employments. Every trace and vestige of evil at once disappears. When, however, the experiment is made on a grander scale,—when a great number of machines, superseding the necessity of a vast quantity of human labour, are suddenly brought into use, the consequences are more serious. A multitude of labourers are, at once, thrown out of work. They find it difficult to obtain other employment, and in fact are, in some measure, unfitted for it by their previous occupations. They have no resources but their labour. Their daily wages supply their daily sustenance. Want of work instantly reduces them to beggary; and sometimes, under these circumstances, their distress is great. The same effect is produced by over-production. A farmer may grow as much in one year, as he can dispose of in two. A manufacturer may, in like manner, have a superabundant stock of goods on his hands. Neither will be likely to go on producing at the same rate as before. Some of their workmen must be discharged; and then the same consequences follow, as upon the introduction of labour-saving machines. These consequences will be imperceptible, if the over-production be slight and partial; but if it be great and general, they will be plainly seen and deeply felt. Sometimes both the causes we have mentioned concur. Machinery substitutes bodies of iron, with souls of steam, to do the work of living men; and the prospect of immense gain stimulates production to such an excess, that the markets of the whole world are glutted. This was the case with the cotton manufacture in 1825. Almost the whole of the machinery employed in this manufacture, has been invented within the last fifty years. When it had been introduced into general use, the same effects upon human labour followed, as in the case of the printing-press. The price of cotton fabrics was reduced. The demand for consumption increased, and the supply was extended to meet the demand. Some, who had been accustomed to spin and weave at home, lost their work; but a greater number found employment in the factories. On the whole, the number of persons employed in this business, instead of diminishing, considerably increased. The inventions of 1816 had a great effect upon this state of things. Among other improvements, the power-loom was introduced. Requiring only the superintendence of a single individual, it performed the labour of numbers. Then, to use the language of another writer, "on every hand the living artisan was driven from his work-shop, to make room for a speedier inanimate one. The shuttle dropped from the fingers of the weaver, and fell into iron fingers, that could ply it faster." These improvements in machinery, of course, occasioned a good deal of inconvenience and distress among the workmen; and before these evils could be wholly cured by the natural operation of the causes which produced them, a heavier calamity was to happen. The manufacture, aided by the new inventions, went on with unabated,—with increased activity. The disproportion between the cost of production and the price of the manufactured article, gave immense profits. Millions were added to the millions already invested in the business. The production of the raw material kept pace with the extension of the manufacture. At length, the supply far exceeded the demand. The warehouses of the world were filled. Prices suddenly fell to half of what they were before. Multitudes were ruined. Thousands of families were reduced to beggary. Some manufacturers discharged a part of their workmen, while they retained the rest at reduced wages. Many ceased to struggle with the adverse torrent, and discharged all their hands, and shut up their factories. The distress that ensued may, perhaps, be imagined. We are not competent to describe it. To aid the conception of our readers, however, we will quote the language of one, who was an eye-witness of a scene of distress, occasioned by a similar, but slighter cause.

"Within a small distance of my house," says this person, "is a large manufactory, the [illegible] of which extends nearly half a mile. I passed by it one morning, after its operations were suspended, and was exceedingly affected by the sight. A little while before, it was all animation and industry, affording honourable means of livelihood to some thousands of my fellow-creatures. The silence that now pervaded it spoke more eloquently and impressively to my heart, than any language could possibly do; it was the silence of unmingled desolation. I visited a row of houses occupied by the workmen. The doors were used to be open, inviting the eye of the stranger to glance, as he went along, at their neatness, cleanliness, and taste. Little groups of healthful children were accustomed to appear about the cottages, full of merriment and joy; and the inhabitants, strong and healthy, saluted you as they went by. But the scene was lamentably changed. The cottages were closed. The inhabitants could not bear to have it known that they were stripped of their little ornaments. No children played about the doors. The very plants that were trained up in their windows, had pined and died. One man only appeared, emaciated and ghastly, a frightful spectre, as if the sepulchre had sent forth its inhabitants, to fill with terror the abodes of the living."

It is not at all wonderful, that distress so [illegible] as this should drive men to do what afterwards they are sorry for. Extreme misery impairs the moral sense. The distinctions of right and wrong are apt to be obscured and lost sight of, in the tumult and tempest of passion. Resentment is almost always blind. Its violence generally expends itself on the apparent cause of injury; while it seldom reaches the real cause. It so happened in this case. The labouring classes cried out against machinery, and some statesmen, too, joined in the cry, when the principal source,—by far the most fruitful source,—of calamity, was an unprecedented excessive production, stimulated by high profits. Even this, however, is but a transitory evil. The bright and cheering beams of prosperity are intercepted only by a temporary eclipse. They are not quenched. They are not extinguished. When production ceases to be profitable, a part of the industry employed in it will be withdrawn. When other employment is found for it, the distress will vanish. And this will take place in a longer or shorter time, according to the circumstances of the nation, and the amount of labour thrown out of employment. If machinery bear a part in producing distress, it also helps to remove it. If over-production do not irritate the wound, it will soon heal. The man who employs a machine, produces as much as he who employs living workmen. If there be a difference of expense in favour of the machinery, the former will make larger profits than the latter. He will grow rich faster. But he will not put his riches into a strong box. He will surround himself with additional comforts. He will employ a school-master. He will patronize the printer. He will travel and become better acquainted with his race. And thus, while he makes himself a far more useful and valuable member of society than before, he gives employment, in one way and another, to quite as much human industry, as his machine deprived of employment. Thus, from the same cause that produced partial evil, flows also universal good. The amount of productive industry of every sort is, in the end, vastly increased.

We will now say something of the more general effects of machinery: and first, of the vast accession which has been made to the productive energies of labour, and the consequent vast augmentation of the products of industry. The necessaries, the comforts, and the luxuries of life are now produced in unparalleled profusion. The effect of abundant supply is to make articles cheap. Every man can now provide for his wants, and the wants of those dependent on him, in a much easier way, and at a much cheaper rate, than ever before; and the happy consequences of this state of things are visible in the improved condition of all classes of civilized society. But it is not in this point of view, that we chiefly delight to contemplate the effects of machinery. Its influence on the physical condition of man is doubtless very great; but its influence on his intellectual condition is greater. Not only are men in general better fed, better clothed, and better lodged than formerly, but, what seems to us to be a matter of infinitely greater moment, they are far better taught than formerly. Machinery has released some from hand-work, who have applied themselves to head-work. Machinery has supplied them with the means of communicating the results of their industry to the world. Thought is no longer restricted to the narrow circle around the thinker. Machinery has furnished better methods of sending it abroad, than speech. Art has been called in to assist nature. The speaker yields to the writer. The tongue is vanquished by the pen. No power can long preserve, or extensively diffuse spoken words, however eloquent. Write them out and give them to the printer, and if they are worthy of it they will spread every where and live for ever. Formerly, Cicero thundered in the Roman forum, in the midst of the proud monuments of his country's victories, and surrounded on all sides by the altars of his religion, to an audience, that shuddered, and thrilled, and quailed, and burned, as he spoke. But when his oration was ended, it was forgotten by the multitude. Some burning thought might be stamped upon the memory. It might pass into a proverb, and be handed down by tradition. But that would not transmit his fame to future times. [illegible] not Cicero written his orations, we should [illegible] known little more of him, than that he was a great orator, and that he lived and died in the later ages of the Roman republic. He did write [illegible], however; but even then, how limited was their circulation, which the copyist alone could give [illegible]!

Very different is the case now. A great orator rises in parliament. Every word, as it falls from his lips, is caught and written down. Early the next morning, the press gives wings to his thoughts, and sends them abroad, by the aid of the multiplied machinery of conveyance, to traverse regions, and to kindle minds, where Cicero did not even dream that it was possible for man to exist. The epithet, "winged words," seems no longer Homeric, but familiar and common-place. In a fortnight, they reach New York. In less than a fortnight more, they are descending the Ohio and the Mississippi. In the mean time, they have been passing across the Channel, into France, Spain, and Germany, learning new languages as they rush along. They make the circuit of the world. They are heard in India, in Australia, and in the isles of the Pacific ocean. Thus a great thinker and speaker, without the press can do little, against it, nothing; but with its aid, he is like the sun, light radiates from him in all directions, and diffuses itself through space. It may be said of him, without hyperbole, that his words go into all the world, carrying with them a momentous influence for evil or for good. By the side of this tremendous energy, every other power becomes insignificant. It proceeds from mind, and acts upon mind, and it is the chief glory of machinery, that it conveys its impulses to the remotest quarters of the globe. And this power is not conferred only on the great orator and statesman, who stands conspicuously out from the mass of his fellow-men. It is shared, in different degrees, by all who have thoroughly awakened their own immortal energies of mind and spirit. It may emanate from the closet of the poorest student, and be of force to revolutionize an empire. It has been truly, as well as forcibly said, by Dr Channing, that "one great and kindling thought, from a retired and obscure man, may live when thrones are fallen, and the memory of those who filled them obliterated, and, like an undying fire, illuminate and quicken all future generations."

But not only has machinery set free from the necessity of labour, many to teach, but a far greater number to be taught. Let the machines, which now supply the wants of the nations, be destroyed, and it requires no prophetic skill to foresee, that, at the same time, the school-houses will be emptied. Let it be imagined, if any are able to imagine, that every machine, for the furtherance of the operations of labour, is destroyed, and that all memory of the mode of their construction is blotted from the mind, and then let us be told, whether we should not, almost at once, sink back into barbarism. Now, thousands are instructed, where one was formerly. Knowledge is diffused widely through all classes of society, and is yet to be diffused far more widely. An unprecedented demand for useful information is every where made. Through the instrumentality of the press, and the modern engines of swift conveyance, sympathies are established between individuals, and between communities of individuals, who entertain similar sentiments, though residing in opposite hemispheres. It is a remarkable illustration of this, that the friends of freedom and knowledge throughout the globe, seem now to constitute but one great party. Wherever a struggle is made for liberty, wherever a contest is begun with that worst of tyrants, ignorance,—that spot concentrates and fixes the attention of multitudes in every civilized nation. Unnumbered minds watch the progress of the contest, with deep anxiety. Thus a universal public opinion is formed. This opinion has strength in its own nature. It is spiritual, wide-reaching, and mighty. It dethrones kings, it abrogates laws, it changes customs. It is stronger than armies. Barriers and *cordons* cannot shut it out. Fortresses and citadels are no defence against it. It spreads every where, and conquers wherever it spreads. God grant, that it may continue to spread and to conquer, till every throne of tyranny shall be overturned, and every altar of superstition broken down!

But the most wonderful consequence resulting from the introduction of machinery is, that it has, to all intents and purposes, greatly prolonged the term of human existence. This is not fancy, but fact; not imagination, but reality. Human life should be measured by deeds, rather than by years. He lives long, who accomplishes much; and he lives longer than other men, who accomplishes more than they. And how much more can he accomplish, whose active existence is but beginning now, than was performed, or could have been performed by one, who lived fifty years ago! The multiplied facilities of intercourse, and the cunningly abbreviated methods of doing every thing at the present day, have introduced extraordinary despatch into all the operations of life, and increased a hundred fold the active power of each individual. Whole communities feel the power of these strong exciting influences. Not only are more important and numerous private acts performed by individuals, than have ever before been done in the compass of one life, but public events, more astonishing and of greater consequence, than were wont to happen in former times in the course of centuries, are now crowded into the history of a single generation. And when we look around us, and behold these strong agents of improvement, acting, at the present moment, with greater energy than ever, and producing every day still more wonderful results, we confess, we are filled with astonishment and admiration. We do not claim, as we have already said, for machinery, the sole agency in producing these magnificent effects. We know that they are principally owing to the operation of moral causes. But we say, that it is machinery, which has removed obstructions out of the way of their action, and brought them into contact with the objects on which they are to act; and that, without the aid of machinery, these causes, whatever inherent energy they might possess, could have produced little or no effect on the condition of society.

We have mentioned some of the general results, which machinery has contributed to produce. There is one particular consequence, that should never be forgotten when machinery is spoken of. It was the inventions of two mechanics, that carried England triumphantly through the contest with Napoleon. Arkwright invented a machine for spinning cotton, and Watt perfected the application of steam power to manufacturing purposes. These inventions conquered Bonaparte. They enabled Great Britain to manufacture for the world. Wealth flowed into her treasury in copious streams, from every quarter. With this wealth she maintained her own armies, and subsidized those of almost all the nations on the continent. She took the lead in the struggle that ensued, and maintained it, until the battle of Waterloo finally decided the fate of Napoleon and of Europe. These inventions made no great show. They attracted little of popular admiration. No laurels bound the brows of the inventors, though, in our esteem, they were far worthier of the laurel wreath, than the proudest conqueror that ever desolated the earth. Their names have not been blazoned in song. The historian honours them but with a cursory notice. Yet did these men, by their astonishing genius, confer on England power to control the issue of the most momentous and fearful struggle that ever put in peril the best interests of man.

How does machinery produce these almost miraculous results? How long have these strong influences been acting on society? A few words by way of answer to these questions, shall conclude this article. We have already remarked, that the invention of some machines of a simple construction, is dated far back in remote antiquity; but these were all helps to individual labour, and are never thought of now, when machinery is named. Then, almost every thing was done by hand. Navigation clung timidly to the shore. Labour performed its task tediously and imperfectly. Knowledge was diffused in scanty measures and by tedious processes. Human improvement advanced, if indeed it did advance, imperceptibly. It is but recently, that any great change has taken place. The era of machinery may be said to have commenced within the last fifty years. Man has called upon the unwearied powers of nature to bear his burdens, and they have obeyed the call. Whatever agency expands, contracts, impels, retards, elevates or depresses, is set at work. We confine elasticity in our watches, and bid it measure our time. With pulleys and levers, we compel gravitation to undo its own work. We arrest the water as it flows onward to the ocean. It must do so much spinning, so much weaving, or so much grinding, before it can be allowed to pass on. With the help of pumps and other machinery, we force the very atmosphere we live in, to raise our water from the wells and from the rivers, and to aid us in an [illegible] and countless variety of other operations. Last, and most wonderful of all, by the application of fire we transform water into that most potent of all agents, steam. Man, as it were, yokes the hostile elements of fire and water, and subjects them to his bidding. It is hardly a metaphor, to call steam the vital principle, the living soul of modern machinery. There is hardly any sort of work, in which this mighty agent may not be employed. It is equal to the vastest operations, and it will perform the most minute. It delves in the mine, it lifts the ore to the surface, and converts it into a thousand forms. It helps to make the [illegible] which it afterwards inhabits. It brings the cotton to the manufactory, picks it, cards it, spins it, weaves it, stamps it, and then distributes the fabrics for sale. It works on the land and on the water, on the rivers and on the seas. It is found on the Rhine and on the Danube, driving huge [illegible] impetuously along through the echoing [illegible], and by the old castles of chivalrous ages, [illegible] to behold far different scenes; and it performs in England the work of many thousand hands. [illegible] tion seems to rest from the effort to discover new forces, and to bend all her energies to [illegible] applications of this. Friction and gravity [illegible] continue to oppose the dominion of [illegible] space. Numberless subtle contrivances [illegible] resorted to, to evade the power of these [illegible] antagonists of motion. Railways are [illegible] stretching over mountains and plain, [illegible] gether and making near neighbours of [illegible] ritories. Long trains of cars, moving on wheels so peculiarly constructed, that their friction is scarcely perceptible, are placed on them. The horse is unharnessed. He is too slow and too weak to perform the required service. At command, the whole moves, hurrying on, under the strong impulse of an invisible power, with a velocity that defies description. The lover need no longer pray for wings to bear him through the air. A railway car will bear him swifter than the swiftest wing. The exclamation of the poet no longer startles us. His description of the physical achievements of man's "genius, spirit, power," are no longer extravagant. It falls far short of the reality.

"Look down on Earth!—What seest thou?—Wondrous things!
Terrestrial wonders that eclipse the skies!
What lengths of laboured lands! What loaded seas!. . .
Loaded by man for pleasure, wealth or war!
Seas, winds and planets, into service brought,
His art acknowledge, and subserve his ends.
Nor can the eternal rocks his will withstand;
What levelled mountains! and what lifted vales!
High through mid air, *here*, streams are taught to flow;
Whole rivers, *there*, laid by in basins, sleep,
Here, plains turn oceans; *there*, vast oceans join
Through kingdoms, channelled deep from shore to shore.
Earth's disembowelled! Measured are the skies!
Stars are detected in their deep recess!
Creation widens! Vanquished Nature yields!
Her secrets are extorted! *Art* prevails!
What monument of genius, spirit, power!"

This was a just description when it was written; and it describes splendid triumphs of the intellect over matter. Let our readers add it to all the wonders which have been achieved by steam, and they will have a tolerably accurate idea of what the mechanical powers have done, and are doing for man.

MACLEAN, Mrs. See *Landon, Letitia Elizabeth.*

MACNISH, Robert, LL.D., better known to Magazine readers by the cognomen which he assumed of "A Modern Pythagorean," was born in Jamaica street, Glasgow, on the 15th Feb., 1802. After receiving the elements of education partly in his native city, and partly at a classical academy in Hamilton under the charge of the Rev. Alexander Easton, he entered upon the study of medicine (both his grandfather and father being at the time respectable practitioners in Glasgow,) and at the early age of eighteen, having undergone his examination before the college of surgeons, he obtained the degree of master of surgery. He first practised in Caithness, for about eighteen months, as assistant to Dr Henderson there, and afterwards went to Paris, where he remained about a year, with the view of completing his medical studies. On his return to Scotland in 1825, he obtained his diploma from the faculty of physicians and surgeons of Glasgow, giving in, as his inaugural thesis, an essay on the Anatomy of Drunkenness. Two years afterwards, this essay was published at Glasgow in an extended form, and very favourably received. It was still further enlarged in subsequent editions, and has been translated into the German and French languages. Dr Macnish's first essays in literature were contributed to "The Literary Melange" and "The Emmet," two Glasgow periodicals, in the latter of which especially, though a publication of humble pretensions, some of his best pieces appeared. In 1826, he first opened up a communication with Blackwood's Magazine, by sending to it a tale entitled "The Metempsychosis," which appeared with the signature of "A Modern Pythagorean," a title which he continued to affix to all his after productions in that Magazine and other periodicals. In 1830, he published at Glasgow, a treatise entitled "The Philosophy of Sleep," which was equally well received with his Anatomy of Drunkenness, and has gone through several editions. In 1834 he published "The Book of Aphorisms," a number of which had originally appeared in Fraser's Magazine. In the same year he paid a visit to the continent, a visit which he repeated in the following year, embracing Belgium, France, Switzerland, Germany, and Holland in his tour. His last publication was a small treatise on Phrenology, to the doctrines of which he had become a zealous convert. Dr Macnish died of influenza, an epidemic then raging in Glasgow, on the 16th Jan. 1837, in his thirty-fifth year. In the following year a series of his tales, essays, and sketches, were published at Edinburgh, in two volumes, with a memoir of the author, by his friend, Dr Moir of Musselburgh. In private, he was much beloved for his happy temper, pleasing manners, and kindness of disposition. Though not tall, he was strongly formed, and greatly addicted to athletic exercises, carrying his attachment to these even to the point of eccentricity. Of his works, his treatises on Drunkenness and Sleep have been unequivocally stamped with public approval. His tales, sketches, &c. have also been well received, but of these it may be said generally, that, while they display considerable fancy and humour, the germ of them may be traced in the writings of his more distinguished contemporaries. Many of his stories, for example, are constructed on the principle of exciting a morbid curiosity regarding some unknown personage, which is not justified by circumstances, nor in the end even gratified. This, having been once done by Washington Irving, in his inimitable "Stout Gentleman," was one of those pieces of humour of too delicate a nature to bear repetition.

MACRIE, Thomas, D. D., a distinguished historical writer, was born at Dunse in Berwickshire, in the year 1772, and died, after a short illness, in his house at Newington, Edinburgh, on the 5th of August, 1835. He received his academical education in the university of Edinburgh, and studied divinity under Mr Archibald Bruce, minister at Whitburn, theological professor in connection with the General Associate (or Antiburgher) Synod. Having been licensed as a preacher by that body, he was at an early period of life ordained minister of a congregation in Edinburgh, in which he continued to labour ten years, applying with great assiduity to the discharge of his professional duties and occasionally publishing able pamphlets on some of the gravest and most difficult subjects of theological inquiry. In the year 1806 he felt himself conscientiously impelled to separate from the General Associate Synod (and indeed he was deposed from his charge by the authority of that judicatory), after having joined with Mr Bruce and others of his brethren in a protestation against the prevailing party "for having departed from some important doctrines of the Protestant churches, of the Westminster Confession of Faith, and of that particular testimony which they had subscribed." The chief ground of separation related to the powers and duties of the civil magistrate with respect to the public interests of religion. On this article, Messrs Bruce and Macrie, with the other ministers, who formed themselves into what was called the Constitutional Associate

Presbytery, maintained, in the most unqualified terms, the doctrines which had been originally held by the leaders of the reformation, both in this country and on the continent; and which are so clearly expounded in the systems of Calvin, Turretine, Voetius, Mark, and Pictet. In the examination of this question, Dr Macrie was irresistibly led to engage in a minute and patient survey of the writings of the reformers, and having at the same time been induced by domestic circumstances to pass much of his time in seclusion, he was gradually brought to form a most intimate acquaintance with the fundamental principles of the Protestant churches, and the characters of the illustrious men by whose labours and conflicts these churches had been constituted. In the year 1812 he published "The Life of John Knox," which not only gave a juster view of the character and conduct of that intrepid champion of Christian liberty than had ever before been exhibited, but shed a brighter lustre over some of the most obscure periods of our national history. This masterly work combined the highest excellences of which biography is susceptible, and at once placed its author in the first rank of historical writers. It was succeeded, after an interval of seven years, by "The Life of Andrew Melville," which, though possessing a less attractive title, is in no respect inferior to the life of Knox. It is indeed the more curious and instructive production of the two, abounding with an endless variety of facts illustrative of the progress of religion and learning not only in Scotland but in other nations. As Melville was the most active instrument in maturing the ecclesiastical constitution of his country, and introducing that efficient system of general and scriptural education which diffused such inestimable benefits over the whole mass of the population, the perusal of this work furnishes the surest means of becoming fully acquainted with all the peculiarities of the Presbyterian establishment, while it imparts a vast store of information, no where else to be found, on many collateral topics of the deepest interest. The subjects which are discussed by Dr Macrie in these volumes throw the most important light on the principles of religious establishments, a question which no man was more capable of solving, and which he was accustomed to treat in a manner more favourable to popular claims than speculative men in general have been accustomed to regard as being altogether consistent with the legitimate exercise of ecclesiastical authority, or with the implied alliance between the Church and any state in which republican principles do not predominate. Besides many valuable contributions to periodical publications, in which Dr Macrie gave additional proof of the inexhaustible amount of his historical learning, and of the singular acuteness and vigour of his mind, he published the following instructive works: "Memoirs of Mr William Veitch and George Brysson," Edinburgh, 1825—"History of the Progress and Suppression of the Reformation in Italy, in the sixteenth century," Edin. 1827,—and "History of the Progress and Suppression of the Reformation in Spain in the Sixteenth Century," Edin. 1829. For several years before his death, Dr Macrie was engaged in the preparation of a Life of Calvin. Through his own indefatigable industry, aided by the active and intelligent investigations of one of his sons, who spent many months at Geneva, he had accumulated such a mass of materials, and had made such progress in the composition, as to give good ground for expecting that the work will yet be given to the world. In private life, Dr Macrie was much beloved. To the native modesty and simplicity of disposition, which is the surest indication of a great mind, he added an unaffected kindness and cordiality which could not fail to gain the hearts of the youngest and most inexperienced of those who applied to him for counsel or for comfort. He was peculiarly accessible to all who were addicted to studies akin to his own, and was ever ready to refer them to the best sources of information. But amidst all his attentions to the claims of private friendship, and to the pursuits of that profound erudition, by the cultivation of which his health was impaired and his days shortened, he never lost sight of the paramount value of the pastoral office to which he had devoted his talents. From his early years his professional studies had been conducted with equal assiduity and judgment, and in every department of theological learning his reading was extensive, but especially in that most essential branch which furnishes the best aids for the skilful and profitable exposition of the Scriptures. In the illustration of divine truth he was at once perspicuous and faithful, and, without being ambitious of fame, his earnestness of manner gave an elevation and tenderness to his speech more capable both of captivating and bettering the heart, than the most admired specimens of artificial eloquence.

MADEIRA, AND THE AZORES, (a.) Madeira belongs to the Portuguese, and is situated in 17° of west longitude, and 32° 30′ of north latitude, off the western coast of Africa. It rises for the most part abruptly from the Atlantic, and its highest summit exceeds six thousand feet. Its picturesque and beautiful appearance has been often described. The air is loaded with perfumes, the large leaves of the banana wave over the walls, and the splendid palm trees overtop the houses. The coffee trees form hedges and copses, and the mimosas, protea, and a variety of the most gorgeous and fragrant plants, of which we see mere fragments in our hot-houses, here rise, says Von Buch, "to tall and stately trees, displaying their far glittering blossoms in the most delightful climate upon earth." Madeira is liberally supplied with rivulets and cascades, that leap from rock to rock, through bushes of rosemary, jessamine, laurel, and myrtle. Groves of chestnut and pine trees stretch out along the declivities of the mountains, and the air is filled with the warblings of thousands of canary birds from their branches.

"Named from her woods, with fragrant bowers adorned,
From fair Madeira's purple coast we turned—
A shore so flowery, and so sweet an air,
Venus might build her dearest temple there."

The uniformity of the temperature of Madeira is almost unexampled. The average range of the thermometer, from the observations of an English physician long resident in Funchal, is from [illegible] to 76° of Fahrenheit during the summer, and from 57° to 65° in winter. The mean temperature deduced by Mr Bowdich from his observations was 66°. Every desirable variety of temperature may be enjoyed, with the accompanying changes in vegetation, until the continued snow is reached at the height of five thousand one hundred and [illegible]-eight French feet. At this height the precipices and chasms are numerous, and many of them frightful and inaccessible.

Madeira has long been the resort of invalids, especially of consumptive patients. The most favourable season for them is from November to the middle of June. In July, August, and September, the heat occasionally becomes excessive, and the influence of the sirocco wind has been known to cause a rise of temperature to 130° of Fahrenheit, a heat sufficient to melt wax. The winters too are sometimes stormy and uncomfortable. The geological structure of the island unfortunately is an insuperable obstacle to the construction of roads, and the invalid is debarred from the salutary exercise of riding.

The *Azores* or *Western islands* are nine in number, and situated to the northwest of Madeira, between 37° and 39° of north latitude, and 25° and 31° of west longitude. The largest and most important is the island of St Michael's. It is about fifty miles in length, and its breadth varies from six to ten. It rises in many parts precipitously from the water, at others very gradually. Here are seen gently sloping and spreading declivities, and there a long line of elevated ridges, with huge angular buttresses of rock running up from their base, between which, narrow silvery streams of water are often dashing along, or unite to form a picturesque cascade. The more level parts are dotted with hundreds of small hills, many of which are perfect cones, while others are truncated, or terminate in crater-shaped summits. The lower parts of the island are cultivated, and exhibit extended fields of Indian corn, wheat, and the various culinary vegetables. Houses and villages are scattered all along the coast, intermixed with vineyards and orange gardens. The population is about eighty thousand.

Next in importance is the island of Fayal, which is of much smaller size, being but about fifty miles in circumference. It rises more abruptly from the water, but is not inferior in point of beauty. The capital of Fayal, Horta, is beautifully situated at the bottom of a semicircular bay, and at the foot of a grand amphitheatre of mountains. The mountains are clothed to their very summits with the myrtle and laurel, and a great variety of flowering shrubs. Gardens and orange groves, so thickly overgrown that scarce a sunbeam gains admission, are numerous, amid which are scattered the country seats, and occasionally a church or a convent. Some of these are very conspicuous and ornamental, from the elevated spots on which they have been erected, overlooking the city and anchorage. *Pico* is separated from Fayal only by a narrow channel, and rises immediately in front of the city; there are many houses upon it along the water's edge, and behind them are the vineyards, extending a considerable way up its acclivity,[*] out of which its blackened, burnt, scorified, and seamed mass towers aloft in imposing grandeur.

The city of Horta has an antique appearance, and its streets, compared even to those of Ponta Delgada, the capital of St Michael's, appear desolate and dreary. They are generally very narrow, wretchedly paved, and not lighted at night. But few persons are seen in them, except in the vicinity of the market-place and custom house. In Ponta Delgada, on the contrary, the streets are thronged with people, vehicles, and donkeys. The large and once splendid churches and convent in Horta are fast falling to decay, and some are entirely deserted.

The prosperity and growth of all the Azores have suffered as much probably from the want of good harbours, as from any other cause. Immediately on the arrival and anchoring of vessels at Horta, it is found necessary to render them more secure, by sending off in large boats from the shore additional anchors and cables; but even this is not always a sufficient protection from the fury of the wind and heavy seas, by which they are often driven from their moorings upon the craggy rocks of Pico or Fayal. The best harbour is at St Michael's, where, although vessels lie at anchor at the distance of half a mile from the city, they have a much better chance of getting to sea, in the event of a gale, than at Fayal. The construction of a safe harbour at St Michael's could be effected with no very great expense; for nature has already done much, and had the island belonged to Great Britain, it would long since have been accomplished. The Portuguese government are however said to have the matter under consideration, and some surveys have actually, we believe, been commenced.

The political changes in the mother country have not been without their effect upon the Azores. Very decided and obvious improvement has taken place, especially in St Michael's. The residence there of Don Pedro, during the contest with Don Miguel, was marked by some vigorous measures. The swarms of friars and nuns were put to flight, their rich territories were taken under the care of the crown, their cells transformed to hospitals and barrack-rooms, and some of their convent chapels converted into monitorial and other schools. One of the chapels is now a reading-room, well supplied with books, periodicals, and newspapers, but supported chiefly by the foreign merchants resident in Ponta Delgada, where two newspapers are moreover published. This is the only island in which an English church has been allowed to be erected, and a resting-place assigned for the repose of the ashes of protestants, which is a neat enclosure, already exhibiting several handsome monuments, and ornamented with trees and shrubbery. The intercourse with the more enlightened Portuguese who accompanied Don Pedro, and with the increasing numbers of English and American residents, has had a very perceptible influence on the before secluded, thick-blooded "morgardos";[†] and their children are now often sent to London, Lisbon, or Paris to be educated. Many new buildings have been erected in St Michael's, some in excellent taste and at enormous cost. New streets have been laid out, and various other improvements commenced. Much of the ceremony that was so great an obstacle to social intercourse, has given way, and females are actually seen in the streets unattended. The introduction of foreign articles of luxury or comfort is now very considerable, many of the shops in Ponta Delgada are well supplied with the fanciful wares of London and Paris, and the fair Portuguese are fast becoming proficients in all the mysteries of "shopping."

The progress of improvement in all these islands is still much impeded by the entail of estates, and the difficulty of purchasing land; but measures are understood to be in train to remove or modify these evils.

With the breaking up of the religious establishments, and the diminution of the influence of the priests, the people have become inattentive to their religious observances. Although the churches are open daily and mass is continued, few worshippers are seen in them. The pic-nic parties, in which the foreign residents so often unite, are accommodated without scruple in the village church, and the repast is allowed to be spread at the foot of the altar. The religious ceremonies and processions are actually ridiculed by those who are required by their office to take part in them.

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[*] These vineyards furnish all the wine that is exported under the name of Fayal wine.

[†] Proprietors of entailed estates.

The changes in the feelings and habits of the people are most observable in the large towns; they have as yet extended but little to the peasantry. One often meets with pretty fair specimens of this class among the drivers of the favourite animal, the donkey. These men travel on foot day after day with little food, always however with a pocket full of parched beans, with which and an occasional glass of sour wine from some village wine shop, indicated by the bush, they are content. Few or none of them taste animal food from one year to another; Indian corn bread, yams, and fish are their staple articles of diet. Even the pig that every cottager rears, goes to pay his rent; and his poultry, if he have any, is demanded by his landlord, or carried to market. Indian corn is so important to them, that its exportation has been often forcibly prevented by the people, until they were supplied at their own price.

The Azorean peasantry, although miserably poor, are cheerful and industrious. During the summer, night after night they are heard beating the flax on the large stone in front of the door of almost every cottage, until near morning, when a short respite is snatched from toil, to be resumed at the first dawn of light. Yet they are always happy. Their love of music and dancing, in which they are probably not excelled by any people, appears to be to them an unfailing resource. At certain seasons one can hardly pass the door of a cottage, without being arrested by the sounds of the rude guitar or *viola*. During the dance the man sings his extempore effusion of some fifteen or twenty lines, to the accompaniment of the instrument, which is continued by his partner, and by all the others in succession, occasionally enlivened with a melodious snap of the fingers. On the entrance of a stranger he is immediately welcomed in a stanza, and alluded to by each dancer in turn.

Geology.—Madeira was several years ago described by Von Buch, as consisting of beds which have been elevated above the level of the ocean by elastic fluids; but he did not notice any distinct craters. Mr Bennet found two craters, one on the eastern, and the other on the western side of the island, the largest being about four English miles in circumference. Mr Scrope, in his ingenious and valuable work on volcanoes, quotes Madeira as one of the many examples of islands composed chiefly of volcanic products, which have risen from below the sea, solely by subterranean expansion, without having been since augmented in height or bulk by the products of external ejections. Mr Bowdich's account leaves no doubt of the volcanic origin of Madeira, and he has described the tuff, scoriæ, pumice, and other volcanic products of which it consists. He found the tuff and scoriæ repeatedly alternating with a cellular basalt (lava?), forming a bed or current, the direction of which was indicated by that of the oval or elongated cells. He also describes a compact and columnar variety of basalt, in many places covering the other strata, and itself here and there covered by fragments cemented by a yellow tuffa. In the centre of the island this was seen immediately incumbent on limestone, which Mr Bowdich considers as the fundamental rock, and the thickness of which is seven hundred feet. This limestone he refers to the transition series. Both this and all the other rocks are traversed by very numerous dykes of basalt. An elliptical funnel-shaped depression was observed about eighty feet above the sea, which was probably a crater of elevation. From Mr Bowdich's account, it presents every appearance of having been formed by a minor volcanic burst, which threw up vast blocks of the rock it rent from beneath the ocean, but did not eject any lava or contents of its own.

The island of Porto Santo appeared to the same observer to consist of tertiary sandstone and limestone, alternating with the volcanic strata. The lowest visible deposit is a calcareous tuffa, reaching to the height of sixteen hundred feet, and traversed by vertical dykes of basalt. The sandstone Mr Bowdich considered as of more recent origin than the volcanic deposit; and in the neighbouring island of Basco he saw the calcareous tuffa covered with beds of limestone a hundred feet above the level of the sea. Count Vargas professes his belief that the calcareous rock and basalt are contemporaneous. But the limestone abounds in shells, which, together with the relative position of the two rocks and other geological appearances, lead to the probable inference of the limestone being of more recent origin. The horizontality of the strata, both in this and some of the other islands, is opposed to the theory of elevation by violent volcanic action beneath a limited area; but the facts which have within a few years been brought to light, have relieved us from the necessity of resorting to this explanation. Our views in regard to volcanic action have been greatly modified, and we have been taught, that a gradual rise of land over a great extent of country has been and is going on. We think that evidence exists of such change in some of these islands.

The curious and highly interesting circumstances in regard to the elevation of the solid strata of the North of Europe, and in South America, are now familiar to geologists. There is now no doubt of the rise of land on the coast of Chili in 1822 and again in 1835 to the height of ten feet in some places. Indeed Mr Darwin observed evidence of a rise of fourteen feet about sixty miles south of Valparaiso, in the shells attached to the rock. Similar facts have further shown that the whole coast of the Pacific from Peru to Terra del Fuego has undergone this change of level. The parallel terraces, as at Coquimbo, which rise to the height of three hundred feet and more, have been found to be covered with seashells, indicating successive elevations. And this has not been effected by sudden and violent action only, but also by insensible degrees, as is now admitted to be the case in parts of Norway and Sweden, and in the island of Great Britain. The elevation of the coast of South America, which we believe first attracted notice, was attended with a terrific earthquake, but in the North of Europe along the coasts of the Bothnian Gulf the rise has been gradual, and unattended with any volcanic phenomena. Mr Lyell has recently examined the marks, cut in the rocks by the Swedish pilots under the direction of the Swedish academy in 1820, and found the level of the Baltic in calm weather several inches below them. He also found the level of the waters several feet below marks made seventy or a hundred years before. He obtained similar results in other places. He discovered deposits on the side of the Bothnian Gulf, between Stockholm and Gefle, containing fossil shells of the same species which now characterize the brackish waters of that sea. These occur at various elevations, of from one foot to a hundred feet, and sometimes reach fifty miles inland. The result of this examination induced Mr Lyell to declare his belief, that certain parts of Sweden are undergoing a gradual rise to the amount of two or three feet in a century.

The relative changes of level of the sea and dry land have been noticed in several other places, especially in the neighbourhood of Pozzuoli, of which M. Arago gave an account at the meeting of the academy of sciences on the 15th of May, 1837, together with the results of the observations of M. Capocci, director of the observatory at Naples. Mr Babbage has proposed an ingenious explanation of these phenomena, viz. the local changes of temperature in the lower strata of the earth; and has calculated that a change of 100° Fahrenheit that should affect a formation of sandstone to a depth of five miles, would cause an elevation at the surface to the extent of twenty-five feet.

The observations of Humboldt and Von Buch, have led them to the opinion, that in submarine ruptions, the strata previously forming the bottom f the sea are uniformly elevated. Hence it is sy to account for the presence of the limestone these islands, and the occurrence in it of fossil hells and impressions. But in some, the limestone of more recent origin.

The great lateral extension of many of the beds f lava in these islands is one of the many evidences of their having flowed under the pressure of he ocean, as has been remarked in Iceland, the Ferroe islands, and others whose submarine origin admitted by all observers. Where volcanic tion has broken out since the elevation, the raters, or lateral openings and dykes, are every here seen. In some of the beds of lava, the sicles or air bubbles are of prodigious size, two more feet in diameter, and those of smaller size e every where met with, even in the hardest and ost compact lava, while that in which they are numerous as to give the lava the spongiform and llular aspect, occupies the sides of the hills or vers large tracts of surface. The hills and mountins with which the islands abound, marking the tes of eruptions, and the plateaux composed of mpact lava and tuff, or covered by pumice and orified fragments, with blocks of obsidian, still rther indicate a submarine origin, and render the semblance to Iceland and the islands already rerred to still more striking.

The interpositions of beds of scoriæ and tuffa, hich are to be seen in the most distinct manner ternating with the beds of basaltic lava all along e coasts, in bold precipices, indicate a series of ections at successive intervals. In some of the lands, high bluffs are composed entirely of very rd, light-coloured tuffa, which, as at Fayal, might mistaken for sandstone; in other places detached sses rise in pinnacles above the waters, or have en cut through by the action of the waves, presenting the most picturesque appearance. Some them are arched and the waters flow beneath.

Great changes on the surface are going on at this day. Within the recollection of many of the inhabitants, torrents of water have rushed from the mountains, carrying destruction in their course, overwhelming cottages and cultivated spots with huge masses of rocks, pumice, and loose earth. There is one spot in St Michael's, several acres in extent, which was verdant and cultivated, until on a sudden the whole surface was covered with huge fragments borne down in the course of one night, and it is now a barren waste of loose rocks. In another spot, on the side of a deep ravine, at the bottom of which flowed a small stream, an enormous mass of pumice, an acre or two in extent and several hundred feet in thickness, suddenly separated from the main body, which formed an extensive plain, and fell into the ravine, leaving a yawning and frightful chasm. In Madeira these destructive effects have been more common and terrific than in the Azores. The effect of a most frightful flood, which occurred in 1803, has been described by an eyewitness, when such a swelling of the rivers took place, that they shortly rose and overflowed their banks, rushing down the declivities, and sweeping away whole vineyards and plantations, cattle, wine, stores, and the houses of the inhabitants, who, with their whole families, perished. Rocks of enormous size, as well as the largest trees, torn up by the roots, were carried from the mountains to the sea. The vestiges of this dreadful flood are still to be seen. A crater, said to be about three quarters of a mile in circumference, had a segment of its larger circumference, with the trees growing upon it, borne down into the bottom of the crater. In the town of Funchal, whole lines of houses with their inmates were swept into the sea, churches, bridges, and edifices of every description were involved in the same general wreck. It was computed that no less than three hundred persons perished.

The action of the waves is continually producing changes along all the coasts, the interposed beds of tuff and cinders are washed away, and the compact beds of lava being left unsupported, fall. The shores are strewed with huge blocks and fragments of all sizes.

Did not the geological structure of the islands furnish abundant evidence of volcanic action, we find it on record in the islands, and in one of the earliest works, that eruptions and earthquakes have occurred at various times, as well within the recollection of living witnesses as at earlier periods.

The first earthquake of which we have been able to find any record was on the 25th of October, in the year 1522, when five thousand persons were destroyed. It occurred at daylight, and was particularly violent in the district of Fanaes da Ajuda and Maia, on the north coast of St Michael's. It extended to a considerable distance, nearly destroying the large city and port of Villa Franca. A large part of the town was laid in ruins, and the Franciscan convent and other buildings were overwhelmed by a torrent of ashes and mud which has since become consolidated into a compact tuffa. Although the destruction of this place is now always attributed, by the present inhabitants, to an earthquake, it is beyond doubt than an eruption took place, of which we find traces in the compact lava covering the tuff and running out into the sea, forming indeed a wall with points here and there appearing above water, and resembling somewhat a coral reef, in front of the town. There is also in front of the town an island of tuff in distinct strata, dipping towards the interior in the form of a washing basin.

In 1563, on the 25th of June, the whole island of St Michael's was convulsed with an earthquake, which was most seriously felt in the neighbourhood of Ribeira Grande. An eruption appears to have taken place near the centre of the island; and the hill formed, which has now the name of Mount Vultur, exhibits abundant evidence of this event. The lava flowed in a current chiefly to the west, and covered Cabuco with porous lava; a tract which still remains uncultivated. At this time a large crater, called Lagoa do Fogo (or Lake of fire), twelve and a half fathoms deep, was formed.

An eruption also occurred on the 2d of September, 1630, in the valley of the Furnas, and the spot is now a nearly circular plain surrounding a somewhat high hill with a crater at top. At this time the cinders were carried nearly ninety leagues, as far as Terceira.

Since then other eruptions of minor importance have taken place from the same spot. On the 10th of October, 1652, the elevated Pico do Fogo was raised, and on the 19th of the same month, the hill called Pico de Jao Ramos, northeast of Lugar de Rosto de Cao in St Michael's. July 3d, 1638, was an eruption from the sea off Pico das Camarhinas, at the distance of one league from land, and where there were forty fathoms of water. In 1691, there was an eruption off St Michael's, and another in 1720, producing an island six miles in circumference. Many earthquakes occurred in the autumn of 1810. On the 1st of February, 1811, was an eruption off Genetes; and on June 13th occurred another, about a mile from the island of St Michael's, which elevated the island called Sabrina. The same phenomena have since occasionally recurred, but there has been no actual volcanic eruption in St Michael's. In the island of St George a destructive eruption happened in 1808.

In a word, all the geological phenomena, which have been remarked, lead to one and the same inference in regard to the volcanic origin and causes of the present aspect of these islands. Indeed, not only Madeira and the Azores, but also the Cape de Verds and Canaries seem to have had a similar origin.

MADISON, James, the fourth president of the United States, was the son of James Madison of Orange County, and was born on the Rappahannock river in Virginia, March 16th, 1751. He studied the English, Latin, Greek, French, and Italian languages, and was fitted for college under the instruction of Mr Robertson, a Scotchman, and the Rev. Mr Martin, a Jerseyman; was graduated at Princeton, N. J., in 1771; and afterwards remained a year at College, pursuing his studies under the superintendence of Dr Witherspoon, the president. His constitution was impaired by his close application to his studies. and his health was, for many years, feeble. In 1776, he was elected a member of the General Assembly of Virginia; in 1778, of the Executive Council; in the winter of 1779—80, of the Continental Congress, of which he continued a member till 1784; in 1787, a member of Congress, and in the same year, a delegate to the Convention at Philadelphia, which formed the present constitution of the United States. He continued a distinguished member of Congress till March 1797, the end of Washington's administration. On the accession of Mr Jefferson to the presidency in 1801, Mr Madison was appointed secretary of state, which office he held during the eight years of Mr Jefferson's administration, and in 1809, he succeeded his friend and coadjutor as president of the United States. After having filled the office for two terms, he retired to his seat, Montpelier, where he passed his remaining years chiefly as a private citizen, declining public office, except that he acted as visiter and rector of the university of Virginia, and as a member of the State Convention to amend the constitution of Virginia. He was distinguished for his great talents and acquirements, for the important offices which he filled, and for his virtues in private life. He died on the 28th June, 1836. Mr Madison was the last surviving member of the convention that formed the constitution of the United States, he was one of its most distinguished champions, and at the time of its adoption he was associated with Hamilton and Jay in the production of the celebrated work entitled the "Federalist." He left, in manuscript, "A careful and extended Report of the Proceedings and Discussions" of the convention of 1787, which framed the constitution of the United States, which he directed in his will to be published under the authority and direction of his widow.

MAGEE, William, D. D., archbishop of Dublin, and primate of Ireland. This distinguished prelate was the son of parents in very humble life, and was a sizer in Trinity college, Dublin, of which he afterwards became a distinguished ornament. He was for some time assistant professor of oriental tongues and professor of mathematics. His celebrated "Discourses on the Scriptural Doctrine of the Atonement and Sacrifice" were first published in 1801, in two vols. 8vo. His other publications consist of one or two occasional sermons, and a memoir of Thomas Percival, M.D. In 1813, Dr Magee was advanced to the deanery of Cork; in 1819, he was consecrated bishop of Raphoe, and in 1822 he was translated to the see of Dublin. He died on the 18th August, [illegible], aged 66.

MAHMOUD II. (a.) The sultan Mahmoud II. died at Constantinople, on the [illegible] June, [illegible], aged fifty-four. He was succeeded by his son Abdul Medjid, who was born on the [illegible] April 1823.

MAIDSTONE; the county and assize town of Kent, is situated on the river Medway, [illegible] miles S.E. by E. from London. The town consists of four principal streets and several smaller ones, which are well paved and lighted with gas. Among the public buildings are the county hall, the gaol, erected in 1818, and distinguished for the excellence of its plan and arrangements; the barracks, built chiefly of timber, and standing at a short distance from the gaol; the county ball-room, erected in 1819; and the theatre, a small but neat structure. In the centre of the town is a handsome building, the lower part of which is appropriated for the corn-market; and behind it is a suitable place commodiously laid out for the sale of provisions. The river Medway is here navigable, and a considerable trade is carried on with the metropolis. The imports consist chiefly of coal, timber, iron and rags; the exports of fruit, hops, corn, and paper. The chief manufacture is that of paper, there being in the neighbourhood several paper-mills, which afford employment for a [illegible] ber of persons. The paper manufactured is the finest kind, and its whiteness is attributed the character of the water. Maidstone has rened two members to parliament ever since the gn of Edward VI., and it continues to do so der the reform bill. By the corporation bill of 35, the town was divided into three wards, and governed by six aldermen and eighteen counors. Population in 1831, 15,387.

MALIBRAN. See *Beriot, Madam Malibran*

MALLOW; a town in the south of Ireland, in county of Cork, situated on the banks of the ckwater, on the mail coach road between Cork Limerick, 163 miles S. by W. from Dublin. is much resorted to in summer on account of its eral waters, which are considered peculiarly cacious in scrofulous and consumptive cases, nd the properties of which are nearly the same as hose of Clifton in England. The spa-house was ilt in 1828 by the lord of the manor, C. D. O. ephson, Esq. M. P. The surrounding district is oted for beauty and fertility, and abounds in genlemen's seats. The town enjoys a good retail rade, and is thriving. Population 7099 within he limits of the borough, including the suburbs of allydaheen.

MALMESBURY; an ancient town of England, ituated at the north-west extremity of Wiltshire, inety-five miles W. by N. from London. It is lmost surrounded by two streams, the Newnton Water and the Avon. These streams unite near he town, and form what is termed the Lower Avon, which runs into the Severn below Bristol. Malmesbury derived its ancient splendour from its cclesiastical institutions. The abbey, once a agnificent structure, was founded in the seventh entury; it was originally a religious house or onastic retreat for a few recluses, until by grants nd donations it became a stately abbey. The uildings are said to have occupied a space of rty-five acres, including the gardens and offices elonging to the monks. The town contains any relics of its monastic glory, but they have ither been converted into dwelling-houses, and ltered from their original appearance, or they are ere fragments, with the exception of the Abbey hurch, the remains of the nave of which have een repaired, and rendered fit to be used for ublic worship. Near the centre of the town is he market-cross, which appears to have been uilt in the reign of Henry VII.; it is a beautiful ctangular stone edifice, with flying buttresses and richly ornamented turret, which is also octangular, ith a small niche on each side, filled with figures, basso-relievo, one of which represents the Crufixion. Malmesbury was one of the earliest inrporated boroughs of England, and was also rly distinguished as a place of trade. It is now, owever, considered on the decline. It formerly turned two members to parliament, but by the form bill now elects only one. Population in 31, 2293. William of Malmesbury, the monkh historian, resided in the abbey here, and obbes, the celebrated metaphysician, was a tive of the town.

MALTA,* (*a.*) the most southerly island in urope,† is in the parallel (Valletta Observatory) of 35° 53′ north, and in the meridian of 14° 30′ 35″ east of Greenwich. The shape is an irregular oval, which has been compared by some to a fish—its southern aspect resembling the back, the bay of Marsa Sirocco the mouth, the various indentations on the north aspect the ventral fins, and the deep indentation of the bay of Melleha, with a corresponding indentation at the back of the island, the tail;—the island, in fact, stretches east and west, and is much indented with bays and inlets of the sea on the side which corresponds with the coast of Sicily, while that which looks towards the African coast is nearly a continued curve. The extreme length of the island is stated by Dr Hennen at eighteeen to twenty miles, and its greatest breadth from north to south ten to twelve miles, and circumference sixty to seventy; but a chart of the islands under the British crown, drawn up at the colonial office, makes the extreme length sixteen and three quarter miles, extreme breadth nine, with an area of ninety-five square miles. The same document makes Gozo (the island adjacent to Malta, and under the same government) nine and three quarter miles extreme length, five and one third breadth, with an area of twenty-seven square miles. Malta is distant from Cape Passaro, the nearest point of Sicily, north, fifty-six miles, and Cape Bon, the nearest point of the African continent, is almost two hundred miles distant in a south-west direction. It is bounded on the east by the island of Candia, on the west by the islets of Pantelleria, Linosa, and Lampedusa, on the north by Sicily, and on the south by Tripoli. The sea dividing Malta from Sicily is only eighty fathoms deep in the middle or deepest part, very shallow in other places, and the bottom sandy it is called the canal of Malta, and is generally rough, with strong currents setting through it on the north-west side towards the east-south-east, and on the east-south-east side towards the east. Gozo Isle, originally known under the name of "Gaulos" by the Greeks, "Gaulum" by the Romans, and by corruption in the Arabic language "Gaudese," which in process of time was Italianized into Gozo (pronounced Godso), is situate on the westward of Malta, distant from thence in its nearest point about three miles, though some parts of the strait is five miles broad. In the channel lies the small islet of Comino, formerly called "Hephostia," of an oblong shape, and about five miles in circumference, with a still smaller islet or rock called *Cominetto*, off its north-west extremity. Malta, comparatively speaking, is low, the highest land being estimated at no more than 1200 feet above the level of the sea, and cannot be discerned until the mariner approaches within twenty to thirty miles off the shore. The hill and dale surface is beautifully diversified, and the natural industry of the Maltese has converted an apparently barren rock into a very picturesque country. As a general feature, it may be observed, that the island is furrowed with valleys running from southwest to north-east, parallel to each other, and becoming longer and deeper as they extend from the eastern and western extremity. One, termed Melleha, nearly divides Malta into two parts; the most fertile, however, is the vale, which forms at its lowest extremity the port of Valletta.

A small range of hills and craggy rocks, called the Ben Jemma Hills, bearing a north-west direction from Valletta, stretch across the entire breadth of the island, and from these different spurs branch off, giving variety to the landscape. The southern shore consists of high or shelving rocks, without creeks or ports, or where a landing could be effected. To the east there is the port of Marsa (*Marsa*, in Arabic, signifies port or harbour) Scala, and towards the south-west that of Marsa Sirocco, capable of containing a great number of vessels. On the west there are two bays, called Antifaga and Magiarro.

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* Abridged from "The British Colonial Library, By R. ntgomery Martin, vol. vii. London, 1837," 12mo.

† The island was formerly placed by all geographers in rica, but was declared to be in Europe, as regards the rvice of our soldiery, by a British act of Parliament.

The port of St Paul is on the coast opposite Sicily, and is so called from a tradition that the vessel in which St Paul was sent prisoner to Rome was driven in thither by a storm. St George's port, towards the north, is not far distant from that of St Paul; St Julian's bay is on the same shore.

Directly facing Cape Passaro are the two most considerable ports; that to the left termed Marsa Musceit, in the midst of which is a small island where quarantine is performed; the other, situate to the east, is called the Great Harbour. These two are separated by a tongue of land, on which the city of Valetta is built, the extreme point having on it the castle of St Elmo, which defends the entrance of both ports. Projecting into the Great Harbour are two parallel points of land, shaped somewhat like two fingers: on one is built the castle of St Angelo, nearest the entrance of the port, with the Burgh (il Borgo) to the eastward; on the other equally small peninsula is the fortress of *La Sangle*, which divides the *Galley* Port from the *French* Port. Fort St Michael is on the land side, and defends the two ports of *La Sangle*.

Città Vittoriosa, or Borgo, is built on the same point of land as the castle of St Angelo, but separated from it by a wet ditch. It has a line of works on its land front, extending from the Galley Port to Calcara Bay.

La Sangle, or Isola, is built on the other point of land, having its land front covered in a similar manner to that of Vittoriosa, by a line of works extending from the Galley Port to the French Port.

More in the rear of La Sangle than St Angelo is the city of Cospicua, or Burmola, commanded by St Margaret's Hill, on which is a fort of the same name, and covered to the eastward by a continued line of works, called Fiorenzola. Still further in the rear, and forming a crescent, joined at either end to La Sangle and St Angelo fortifications, are the strong Cotoner lines, consisting of a succession of bastions without any advanced works, which were intended to be effected, but circumstances prevented their completion. By sweeping round the French Port to Calcara Bay, towards the interior of the country, a considerable space is left in front of the St Margarita lines, which is intended to afford shelter to the inhabitants in the event of the island being attacked. The two points of land which jut out to meet the promontory on which St Elmo Castle is built, are also strongly fortified. The one, Fort Ricasoli, which is very large, but irregularly built, this, in conjunction with Fort St Elmo, defends completely the entrance of the Great Harbour; the other, Fort Tigné, protects Marsa Musceit Harbour, which is also further guarded by Fort Manoel, which is built on the quarantine island before adverted to. This fort is regularly and beautifully built, has five bastions, a half moon, and a covert-way: it is mined.

In addition to these powerful works, Valletta is effectually protected on the southward or sea side, where the neck of the peninsula joins the main, by the fortifications termed La Floriana, a line of works extending from the great Port to that of Marsa Musceit, and in advance of this on the side near the great Port, there is a beautiful crowned horn-work, with a covered way.

The Floriana constitute five successive lines, any one of which, well manned, would be sufficient for defence. The ditches in some instances are ninety feet deep, and excavated in the solid rock, the greater part of the ramparts being in like manner formed by hewing the rocks into the required shapes. Thus Valetta city is protected on two sides by the waters of the harbour, which no hostile fleet could enter without being immediately blown to atoms: the batteries of St Angelo, for instance, rising in four tiers of very heavy guns, a single discharge from which would sink the largest vessel. The entrance to the port is still further secured by an enormous chain or boom capable of resisting the shock of any force that may be brought to bear on them. These extraordinary, and, it may be added, impregnable works are the result of continued and unremitting exertions for upwards of two centuries.

The old city stands upon a hill which overlooks the whole country as far as La Valetta; it has a front, with a ditch and covered way. Along the top of the hills which cross the island and separate the inhabited and cultivated parts of Malta from the remainder, a wall five feet thick was erected by the knights as a retreat for the troops to fall back on if unable to prevent the landing of an enemy. Forts and batteries were also erected at ports St Paul and Marsa Sirocco, which would place a vessel attempting to anchor under a cross fire; and towers and redoubts were erected along the whole coast in such a manner as to communicate almost immediately with each other. The lines also are of immense strength, enclosing the various quarters of the capital for the space of a square mile and a half, and forming works of such extent and intricacy, that it is said 25,000 men would be required to man them in their full extent, when they might well be deemed impregnable. The French had but 6000 men to defend them, and yet could only be reduced by famine. Upwards of 1000 pieces of cannon were mounted on all the works, and Bonaparte entertained so confirmed an opinion of the strength of the place, that when he was asked on his departure for Egypt to give instructions relative to the defence of the garrison and fortifications, he told the officer in command (Vaubois) *to lock the gates and put the key in his pocket.* In fine, it may be said that Malta is as defensible as nature and art combined can render it. To sit down regularly before Valetta and its surrounding fortifications would require a well appointed army of many thousand men, and if the fortress were well manned and provided, there can be no estimate formed of the time it would hold out, as the besiegers, in addition to their land forces, ought to be able to blockade the port and command the dominion of the Mediterranean.

La Valetta, the modern and chief city of the island, founded by the celebrated grand master of that name in 1566, and completed in 1571, may be considered one of the finest towns in Europe. The kings of France, Spain, and Portugal, the Pope, and all the knights who resided out of

Malta, having contributed munificently towards its erection. The neck of land or promontory on which it stands (originally called Mount Sceberras) divides the main harbour (Great Port) from Marsa Musceit haven. where the shipping perform quarantine. The neck is estimated at 3200 yards long, by 1200 broad, descending by a gradual slope. Its whole length, from the land barrier at the southern extremity to the point of St Elmo, which terminates in the Mediterranean in a narrow point of about 300 yards, bearing north-east by north, on which point the citadel and lighthouse of St Elmo are built. The centre of this neck of land is its highest point, whence it gradually slopes to the water's edge at either side. The longer streets, eight in number, run in parallel lines along this ridge or "hog's back" from south to north, or, more strictly speaking, from south-south-west to north-north-east, and are intersected by shorter streets, eleven in number, which run from one harbour to another up the sides of the ridge. Besides these regular streets, rows of houses front the works all round, a carriage space being left between them. The thoroughfares afford an excellent means of ventilation, while the gradual descent towards the sea on all sides facilitates the removal of all nuisances. The public buildings and private dwellings are of a very superior order, the latter being inferior to those of no other city. The houses are of solid stone, with flat or terraced roofs, composed of stone slabs, covered over with a thick bed of "terras," or "puzzolana," so as to be impenetrable to rain, and, as in Calcutta and other parts of the east, affording a cool and agreeable morning and evening promenade. Very little wood is employed, the stair cases, floors, &c., being of stone. The lower parts of the houses are used for shops, stores, or habitations for the poorer classes. Between the ground and first floor is a "mezzanino" or middle floor, rarely exceeding seven or eight feet in height, and frequently used as bed-rooms or eating apartments; the principal suite of apartments being on the first floor. Each house has generally a court, with a tank or large well, and into this court the apartments of the principal chambers look. A house fit for a moderate family, containing twelve or fourteen apartments, may be rented at £20 per annum, and an equally commodious house and garden in the country for half that sum. The paving and lighting of Valletta are excellent: the principal streets are formed with flags cut out of the hardest pieces of native stone, or with blocks of lava from Mount Etna, and a regularly raised footway runs on either side. Water is supplied by means of an aqueduct (17,000 yards long) the quantity introduced being fifty-eight gallons per minute. In order to extend the supply of this indispensable aliment, every house is furnished with a tank, into which baked earthen pipes convey the rain water from the flat roofs, and wells and cisterns are sunk in every possible situation. The buildings appropriated for Government are admirable, and the palace of the governor is suited for the residence of a crowned head.

Gozo (or Gaudisch, as the natives call it) is separated from Malta by an arm of the sea, four to five miles wide; with an average length of eight miles, by six broad, and twenty in circumference; although fertile and thickly inhabited, it contains no town, the inhabitants being scattered in six villages, protected by a strong fort, Rabato, in the centre of the island. The surface of the island is very agreeably diversified with hill and dale, some of the more elevated parts in the north-west being nearly 2000 feet above the sea. A chain of these elevations encircle the island, embracing a beautiful series of fertile valleys, separated by gently rising grounds; the summits of some of the mountains are flattened, and truly table lands; others are rounded or mammillary; and there are four or five remarkable detached hills, perfectly conical in shape, and presenting the appearance of old volcanic productions. The interior of the island and its shores abound in caves and rocks, being of the same calcareous nature as those of Malta, but the country is much more rural and agreeable. Fort Chambray, commenced in 1749, contains the principal accommodation for troops; it lies on the south-east side of the island, and is built upon an elevated promontory, forming one side of a little bay in which the Malta boats anchor; the shore all round is very bold, especially to the south, where it rises into rugged and inaccessible cliffs, with huge masses of rock broken off from them and projecting into the sea; the road gradually winds from the sea to the fort (which is 500 feet above the shore) after a circuit of about 700 yards; the area on which the fortification is built being about 2500 feet in circumference. The barracks accommodate 250 men, are admirably arranged, and there is a small but excellent hospital attached. The lieutenant governor resides near Migiarro, a small and insecure port, but the only one which the island possesses. A constant intercourse is kept up with Malta, the distance to Valetta by sea being eighteen miles, although the two islands are within four miles of each other. The oblong islet of Comino, two miles in length, lying between the larger islands, has a few inhabitants, employed in cultivating about thirty acres of land, and in preserving the numerous rabbits with which the island abounds. Besides Cominetto, which lies off the north-west end of Comino, there are four or five other islets, or rather rocks, belonging to Malta and Gozo.

Climate.—The climate of Malta is decidedly warm, indeed, almost tropical. The *maximum* temperature for the year may be taken at 90° F., the *minimum* at 46°, and the mean at 63° F. The barometer may be similarly quoted at 38° 8′, 30° 2′. and 30° 5′. The hygrometer 87°, 30°, and 58½°. The heat of the summer is doubtless increased by radiation of the solar rays from the rocks surrounding Valetta; but in the country around, and in Gozo in particular, the atmosphere is from 2° to 4° cooler. The most prevalent winds are the south-east (the Sirocco), and the north-west; the former characterized by its humidity, accompanied by an exhausting degree of temperature, producing a damp and suffocating smell to the sick: these Siroccos are most prevalent in August, September, and October. The north-east wind ("gregale") is brief and violent in its duration, frequently occasioning serious mischief in the harbour during the winter months. Occasionally sudden and partial gusts of intensely heated air are felt in Malta, which are blown from the coast of Africa. Fortunately they seldom exceed half a minute in duration, for if longer continued life would be extinguished, owing to the severity of the heat, which is remarkable for blowing in tracts, affecting the inhabitants of one house and not their neighbours. It is probably a portion of the "Samiel" or "Simoom" of Africa. When dry wind blows over the island, especially in summer, volumes of impalpable dust float about, which is precipitated in the shape of a shower of mud, on the recurrence of a damp wind, or when the fogs and dews are peculiarly long. Snow only appears at Malta as a luxury imported from Etna, but in the winter months there are frequent hail showers. Rain falls with tropical violence in December, January, and part of February. About March the sky gets settled; an occasional shower may fall in April and May, but during June, July, and August, not a cloud is to be seen. September and October are cooled with showers, the air is placid and invigorating, and termed "St Martin's," or the "little summer."

Agriculture.—The island of Malta contains about 50,000 acres of cultivated land. The island of Gozo, 10,000. About half is private property, the remainder may be nearly divided between the crown and the church. The leases are from one to eight years, and long leases from nine to a hundred years. The rent for the best land is £3 per acre, but there is not much of that quality; the average rental is £1 an acre. Property on short lease cannot be sub-let without the consent of the proprietor. In long leases sub-letting is allowed. The repairs fall upon the proprietor in the short leases, and upon the tenant in the long ones. In all arable lands it is prohibited to sow wheat and barley two years in succession. The principal objects of agriculture are cotton, grain, and sulla; and it is to these that the farmers principally direct their attention; they, however, extensively cultivate beans, peas, a species of wild pea called cicciarda, carrots, melons, potatoes, cabbages, cauliflowers, and other articles of that description; these are principally cultivated as intermediate crops between cotton and corn. In general the farmers divide their lands in two equal portions; on the one half they cultivate cotton, and on the other grain.

Cumin seeds and aniseeds are successfully cultivated, and exported in considerable quantity to the surrounding countries in the Mediterranean, as well as to England and America; and the cumin seeds of Malta are as good as any, if not the best, in the world. The squills grown and dried in Malta are found to produce the best oxamel attainable from that bulb; and the quantity of oranges hitherto furnished by Malta to the tables of the luxurious in France and England, might be greatly increased. Indeed, the oranges of Malta are confessedly the finest of the Mediterranean, and its melons are superior to the best of the southern countries of Europe. There are a variety of other delicate fruits. Vegetation of aromatic plants and herbs of every sort, aided by rich pastures refreshed by the regular falling of nocturnal dews, enable the natives to rear considerable herds of cattle and flocks of sheep and goats, whose flesh, aromatized by excellent food, possesses an exquisite flavour. Poultry are plentiful and excellent. Quails, and a great diversity of other wild-fowl, never fail to come in vast flights at the time of their annual migrations.

Much attention is bestowed on the management of bees: a great many hives are kept in several parts of the island, from which they yearly procure a large stock of deliciously-flavoured honey. Great pains are also bestowed on the breeds of asses and mules, and the qualities of these useful animals have been highly improved by the inhabitants. The asses, especially, are well known for their unparalleled strength and beauty; they always sell at a high price. The goats are of a very fine breed, but the horned cattle are small, and principally imported from Sicily, Barbary, and the adjacent coasts. Snakes are to be found, but they are not poisonous. Birds of various kinds migrate to the island at different periods, and the hawks of Malta were formerly much celebrated; the bees were also renowned, and indeed continue to yield such excellent aromatic honey, that it is conjectured the island was thence called "Melita" by the Greeks. Mosquitoes and other insects abound.

Population of Malta and Gozo in [illegible].

	Ma.	Fe.	Totals.		[illegible]
			Males.	Fem.	
MALTA.					
Natives,	47321	51606	52047	[illegible]	[illegible]
British Residents,	553	440			
Foreigners,	1409	451			
King's Troops,*	2353	–			
Wives of Do.,	–	302			
Children of Do.,	345	356			
Persons connected with the Troops, not Soldiers,	37	32			
Children of Do.,	29	23			
Gozo					
Natives,	7837	8315	7845	8322	[illegible]
British Residents,	8	7			
			59892	[illegible]	
			[illegible]		

The Maltese are generally of middle [illegible] with robust frames, and small hands and feet; the hair black, and sometimes inclined to [illegible] frequently thick, and skin swarthy among the common people where exposed to the atmosphere; the eye dark and bright, and among the higher classes of females, remarkable for that fulness and languishing beauty which constitutes the great charm of oriental women. In some of the villages, such as the Casal of Zurrieq, there are a remarkable number of blue-eyed persons to be met with. In general there is throughout the villages a good deal of the Spanish character displayed, but in the cities, and among the higher orders, a sort of French and Greek character is combined. The men are industrious, active, frugal; attached to their country, passive, but yet nowise deficient in courage, as they have often shown, and they are considered the best seamen in the Mediterranean. Those in easy circumstances dress like other Europeans, but the lower orders are clothed in a loose cotton shirt, over which is a wide vest, or jacket, with silver, sometimes golden buttons; a long twisted scarf, wound several times round the body, with very often a sheathed knife placed therein; loose trowsers, leaving the legs bare from nearly the knees downwards, and very peculiar shoes called *korch*, which is a leathern sole, fastened with strings, or thongs, to the foot and leg, nearly like the old Roman sandal. The head in winter is covered with a woollen cap of different colours, having a hood attached, and falling down on the back; in summer, large straw hats are worn. The women are attached to their primitive dress, consisting of a short cotton shift, a petticoat (generally of a blue colour), an upper [illegible] ing at the side, and a corset with sleeves. The hair, covered with pomatum and powder is arranged in a high cone in front of the head, and the face is concealed by a large black silken veil called *faldetta*, which the wearer adroitly shifts when exposing her features to a side or full view. Many ladies of the upper class have recently adopted the English costume, except during the time of performing their religious duties, when they appear at church in their ancient costume.

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* Exclusive of the Malta Fencible Regiment, the [illegible] which are returned with the native population.

The upper class speak Italian; the language of the common people is a patois compounded of Arabic, German, Italian, and other languages. The Arabic, however, so far predominates, that the peasants of Malta and Barbary can without much difficulty understand each other.

Religion.—A scrupulous attention to the rites of their church is characteristic of the Maltese, whose established faith is that of Rome. The landed property belonging to the church is considerable; and there are about 1000 secular and regular clergy in the two islands.

Malta is at present ruled by a military governor, appointed by the crown, and a council, the constitution of which is seven members, four of which must hold offices within the island, namely, the senior officer in command for the time being (not in the administration of the government); the chief justice; the archbishop; and the chief secretary to government. The three unofficial members of the council are to be selected by the governor; two from out of the chief landed proprietors and merchants, being his majesty's native (Maltese) born subjects; and the third from among the principal merchants of the island, being a British born subject, and who shall have actually resided in the island for a period of not less than two years. The island is protected by a naval squadron, Malta being the head quarters of our Mediterranean fleet; and by a garrison of British troops, and a regiment of Maltese fencibles,—consisting of twenty-five officers, forty-one non-commissioned ditto, and 468 rank and file, which the Maltese themselves pay for

MALTHUS, THOMAS ROBERT, whose speculations on the question of population form so prominent a feature in modern political economy, was born on the 14th of February, 1766, at the Rookery, near Dorking, then the property and residence of his father. Having received his earlier education under the care of the Rev. Mr Graves of Claverton, he went to Jesus college, Cambridge, where he obtained a fellowship, and graduated B.A. 1788, as ninth Wrangler; M.A. 1791. In 1798 he published his "Essay on Population, with Remarks on the Speculations of Godwin and Condorcet," being the precursor, rather than the first edition, of his great work on Population. In 1804 he was appointed to the chair of History and Political Economy in the East India Company's college in Herefordshire; a situation which he filled during the remainder of life. He was a fellow of the royal society; and some years before his death was enrolled as a member of the National Institute of France; a distinction conferred generally only on men of the greatest eminence. Mr Malthus was a clergyman of the church of England, and during the greater part of his life read prayers and preached regularly in turn with the other professors, in the chapel of the East India college at Haileybury; in these services, and, indeed, in every other ordinance of religion, his manner was uniformly serious and devout: his sermons were calculated to make a strong impression on the minds of the young men who felt and acknowledged their value; and they became more earnest and more edifying every year he lived. In religion, indeed, as well as in other things, he was always unobtrusive and unostentatious. In person, he was tall, and elegantly formed; and his appearance, no less than his conduct, was that of a perfect gentleman. His death took place at the house of his father-in-law, at Bath; on the 29th of December, 1834; and he was buried in the Abbey church. He left a widow, the daughter of John Eckersall, Esq., of St Catharine's, near Bath; a son, the Rev. Henry Malthus, and a daughter. For an account of his peculiar tenets, see *Political Economy*.

MALVERN. There are two parishes of this name in the county of Worcester, distinguished as Great Malvern, and Little Malvern. Population of Great Malvern in 1831, 2140; of Little Malvern, 88.

Great Malvern is a place of considerable resort in consequence of its antiquities, natural beauties, and salubrity, but more particularly for its medicinal springs, called St Ann's and the Holy Wells. The village contains several hotels and lodging-houses for visitors. The church of Great Malvern is a very ancient Gothic structure, of the cathedral description; it is 171 feet in length and sixty-three in breadth. It has a fine tower with battlements and pinnacles, rising from the centre of the building, 124 feet in height, containing six bells, a clock, and chimes. This church formerly belonged to, and formed part of the famous monastery which long existed here, and held the rank of one of the most magnificent, rich, and influential religious institutions of the kingdom. It was founded for secular canons, previously to the conquest, and endowed by Edward the confessor; the only part of this once extensive edifice now remaining is the gateway, which is in a state of excellent preservation. At the general dissolution of monasteries in the reign of Henry VIII. the inhabitants bought the church, and made it parochial.

The *Malvern Hills* adjoining this village, and extending into Herefordshire, are of very large dimensions, stretching along for nine miles in length, and varying from one to two in breadth. The highest parts are those called the Worcestershire and Herefordshire Brecons; the former is 1300, and the latter 1260 feet above the level of the plain. These hills are approachable with the greatest ease imaginable, even by invalids, so gentle in some parts is the acclivity; they present views of the finest description over Wales and the counties of Hereford, Gloucester, and Worcester. They have the appearance of vast rocks, and are composed of limestone towards the west, and a species of quartz towards the east.

MANSFIELD; a town in the county of Nottingham, on the border of Sherwood forest; distant from Nottingham 12 miles N. by W.; from London 128 miles N.N.E. It was anciently a British, and afterwards a Roman station, and flourished during the Saxon heptarchy, being a favourite occasional residence of the Mercian kings. In the time of Edward the confessor it was a royal demesne, and continued so until William Rufus gave it to the cathedral of St Mary, at Lincoln. When Sherwood Forest was a royal chase, the kings of England had a hunting seat here. The town is neat and well built, and has latterly been considerably improved. It has some extensive cotton-mills, besides manufactories of hosiery and lace. A railway, seven miles in length, connects it with the Cromford canal. Population of parish in 1831, 9426.

MARBLING PAPER. The art of marbling paper was originally introduced into England from Germany. In 1810 it made its appearance in Glasgow, and was carried on to a considerable extent by Mr Hugh Sinclair, and subsequently by Mr Alexander Inglis. Since then, Mr John Ferguson (to whom we are indebted for the materiel of the present article) has bestowed much time and labour in perfecting the art. He has produced with much success those fine patterns of marble paper known under the names of Spanish, Dutch, and Nonpariel marbling. The following will give an idea of the principles on which the process of marbling is conducted. A trough is provided nine feet square and four inches deep, into which is put a solution of gum. The colours are ground down to the consistency of cream, and mixed with gall and turpentine. These are then taken up with a large brush and shaken over the solution in the trough. The paper is then lifted by the two corners and laid gently down on the type of the colours; after which it is removed on rods and hung up on a frame twenty feet in length by nine feet in width. When dry, the paper is glazed by a calender, and sent into the market. The different patterns are formed by laying down the colours in stripes, or in figures like shells, and drawing them to the particular pattern desired, whilst they are floating on the surface of the gum. Book edges are marbled in the same way as a sheet of paper; the operation, however, requires to be performed with care, lest the colours should make way between the leaves and deface the book. The ends are first marbled and then the fore-edge. The colours for marbling require to be of a very fine description. Formerly, indeed, the artizans in this line were very careful of expense, and deemed rose-pink with a little vermilion a costly material. Mr Ferguson furnishes us with a list of colours, the bare mention of which would have astounded his predecessors in the art—*Reds:* Deep scarlet Lake, Carmine, &c. *Blues:* Prussian, Antwerp, Verditer, and Cobalt. *Greens:* French, Brunswick, Emerald, and Mineral. *Yellows:* Lake and Crome. Besides these, a great variety of intermediate shades are used; and the marbler now requires a knowledge of design, and considerable skill in the combination of colours, to produce the effective and highly ornamental patterns exhibited in our costly bound books.

MARIA LOUISA, (*s.* to articles *Bonaparte* and *Parma.*) Maria Louisa Leopoldine Caroline, archduchess of Austria, and wife of Napoleon, was the eldest daughter of the emperor Francis I., and of the second of his four wives, Maria Theresa of Naples, and was born at Schönbrun, in 1791. She was bred like other daughters of monarchs. She was taught to speak French and Italian, and to play on the piano, with all the other appendages of drawing, dancing, and riding. Born at the very dawn of those tempestuous events, in which Austria was so long and so disastrously engaged, and in which, by a succession of disgraceful campaigns, her father lost, one after another, the best provinces that a succession of marriages had added one after another to the possession of his ancestors, Maria Louisa had learned from her nurse never to think of the French without shuddering with horror, never to finish her prayers till she had added a curse upon the name of Napoleon. But fortune favoured the brave. Austria fell before Napoleon, and could only propitiate the conqueror by bestowing on his hand Maria Louisa. The mild creature never knew how to show any repugnance to other people's desires. She had been taught to hate, and she hated; she was now bidden to love, and she married. On the 11th of March, 1810, the nuptials were celebrated at Vienna, Berthier prince of Neufchatel representing the person of Napoleon. Two days afterward the bride proceeded towards France.

In a little village near Soissons, a single horseman, in plain dress, rode by her carriage, and approached as if to reconnoitre more closely. The carriage stopped, the door was opened, the horseman entered, and they proceeded together. Thus did Napoleon, by an unceremonious surprise, introduce himself to his bride; thus was her love romance commenced and finished. During the three following days, she was led through all the ceremonies of the French court, and, March 31st, she received the nuptial benediction from cardinal Fesch, uncle of Napoleon.

Maria Louisa was then in the flower of her age. Her stature was above the middle size; her complexion fresh and blooming; she had auburn hair, Austrian eyes and lips; her hand and foot served as a model for the *Concord*, a statue of Canova. Her temper was sweet and gentle. As obedient and dutiful wife, she won the affection of her warrior, by all the charms of youth and [illegible]. Her modest and artless deference could not fail to conciliate his despotic and wilful temper, and her unaffected tenderness was repaid with kindness and regard. Her intellectual faculties, it is true, were far from equalling those of her unfortunate rival Josephine, who exerted a [illegible] influence upon the mind of her consort. Maria Louisa could do little more than bless and smile. Napoleon loved her the better for it. His ideas of the sex he had expressed to Madame de Staël, when that ambitious lady asked him who was the woman he liked best in the world. "*Celle qui fait plus d'enfants,*"* replied the destroyer.

A year had scarcely elapsed, when Maria Louisa made him father of a son. Never was a child more noisily greeted at his coming into the world, nor could ever a woman be prouder of her offspring than was the fortunate mother of the king of Rome. All Europe was awakened by the thunders announcing her happy accouchement. High mass was celebrated at all altars. Monarchs and princes came to attend the baptismal ceremony. Napoleon felt as if the revolving wheel of fortune had by that event been stopped for ever. Alas! for him, that event was the last of unmingled prosperity. His impious war of Spain raised against him the execration of the just; the imprisonment of the pope excited against him the zeal of the pious; his campaign of Russia armed heaven and earth against him.

His hour had come. The [illegible], [illegible] determined his destruction, [illegible] his [illegible] and made his bewildering greatness the [illegible] of his fall. While starting for his last [illegible] of Germany in 1813, with the vain hope of conciliating his father-in-law, he placed his [illegible] wife at the head of the regency which was [illegible] govern in his absence. His ingenuous empress, his mild and inexperienced companion, whom he had always called *ma petite oie*, "my little goose," was raised at once to the government of a tottering empire, in the midst of intrigues and factions, in days of perils and storms. Her task, however, was not so difficult as might be supposed. She received, by the mail from her husband, the speeches she was occasionally to deliver before the senate; by her side was constantly sitting Cambacéres, the archchancellor, the right eye of Napoleon in all political transactions; and the *yea* and the *nay*, by which the regent answered all questions, were always dictated by the nod of the minister.* The destinies continued adverse; the French territory was invaded; the flood threatened from every part. While Napoleon by marvellous efforts checked the allies on the right, they prevailed on the left, and arrived under the walls of the capital. Maria Louisa, who had nothing to fear from the besiegers, among whom were her father and brothers, without waiting for the result, insisted on being sent to Blois; and thither she was accordingly escorted by twenty-five hundred men, the very soul of the garrison of Paris. Three days after, the capital surrendered; and eleven days later the emperor abdicated his crown at Fontainbleau.

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* She who gets most children.

Maria Louisa, willing or unwilling, always without a will of her own, was obliged to follow her father to Vienna. In his exile, in his mock empire of Elba, Napoleon received visits from his mother and sisters. Friends and servants appeared by stealth, in haste, with a tear of regret, or with a ray of hope for better days. Towards the August of 1814, another visitor came; a fair lady with a fair child in her arms, sailing from the neighbouring shores of Italy, with an air of great precaution and mystery. Napoleon received her with great attention, covered the child with his kisses, and clasped the mother to his bosom. There she remained two days and two nights, jealously hidden from public curiosity. Then, with the same secrecy, preparations were made for her departure. Napoleon accompanied her to her barge, and stood upon the shore, long eagerly gazing upon the fading sail. Whence that lady had come, whither she was going, who she was, could not then be told. It became, however, afterwards, but too certain, that the lady was not, as history would fain have recorded, Maria Louisa, nor the child, the king of Rome.†

From the Isle of Elba, Napoleon started for new fortunes. His eagle once more spread its wings over France; his standard once more waved on the battle-field. One of the first cares of his re-established empire, was to assert his sacred rights over his wife and child. But Austria no longer dreaded his power. Austria was now at the head of his enemies; and Maria Louisa, under the paternal protection, and a prisoner in the Austrian court, was learning to forget her husband, and embroidering the banners which were to confront his eagle. An attempt was made, by the friends of Bonaparte at Vienna, to carry of his empress and heir, whom Napoleon had promised to present to the people at the *Champ de Mai*. But the plot was discovered, and Maria Louisa remained at Vienna till after the battle of Waterloo.

A fugitive, a prisoner, a victim chained, Prometheus-like, for torture, to the rock of St Helena, Napoleon seemed never to think of his wife but with the fondest affection. His empress and child were the object of a profound anxiety. His letters and messages to her were reiterated with vain but incessant assiduity. The first question he addressed to all visiters, was about her. To her he gave his last thoughts, his last words. To her, in his last will, he intrusted all he still fancied himself to possess. To her love and kindness he recommended all such friends as had any claims upon his gratitude; his veterans, the companions of his glories, the sharers of his disasters. Whatever might have been his opinion of his empress during his life, he seems to have died her enthusiastic lover.

At the epoch of the treaty of Fontainbleau, in 1814, the allies, having to dispose of the empress, thought of indemnifying her for the loss of her august titles, by giving her a share in the spoils of Italy; that unfortunate Italy, which, in all political transactions, has always been dismembered and parcelled to balance accounts. It was resolved, that she should be duchess of Parma, Placentia, and Guastalla, and her state was to be transmitted to her son as legitimate heir. The attempts of Murat, king of Naples, to make himself master of Italy, the troubles of the whole peninsula, and subsequently the return of Napoleon from the isle of Elba, prevented the princess from being sent to her states. After the battle of Waterloo, Bonaparte's son was rebaptized; instead of his paternal name Napoleon, he was called Charles Joseph; his title of King of Rome was changed into that of duke of Reichstadt; he lost all right to his mother's succession, and was withdrawn from her guardianship.

Maria Louisa had no spirit and no capacity for resistance. They bade her put off the arms and liveries of her husband; to divest herself of the title of empress; to forget Napoleon; to surrender his son. In all she was obedient. Widowed and childless, but surrounded with pomp and magnificence, all things being settled and disposed for her reception, she left Vienna and hastened towards her humble metropolis. Greeted and applauded wherever she passed in her journey, she drew after her the best part of the population of Lombardy. Parma was crowded with strangers of all nations and conditions. They were especially the friends and servants of her husband, French and Italian warriors of the Russian and German campaigns; disappointed people, who looked to her as the centre of their discomfited party, and to her son as the *spes ultima mundi*.

The show and triumph displayed on the occasion, the enthusiasm excited by her appearance, were unexampled in the annals of Parma. The first intoxication of the Napoleonists, however, considerably abated, when they heard that her son was not with her. The disappointment was still greater, when the new government, thanking them for their good wishes, desired all strangers to return to their homes. The festivals were soon over; the capital was restored to order; and Maria Louisa was left alone with her subjects.

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* We find among the memoirs of that epoch a little anecdote universally asserted, as to leave small doubt of its authenticity. Napoleon, who was not always careful in the choice of expressions, in a fit of impatience against some show of a recusant spirit on the part of his Senate, walking up and down in a passion, and stamping upon the floor had exclaimed, "*Ils sont des ganaches*," "They are blockheads." Maria Louisa, who was not much beyond the elements in her French, timidly approaching him, asked for the meaning of the word, *ganache*. Napoleon answered with visible embarrassment, "Why,—it means,—clever fellows." Maria Louisa treasured up the word. During her regency, being pressed to answer some difficult question, "Let us consult the archchancellor," said she, "*qui est le plus grand ganache de tous*," (who is the greatest blockhead of all.)

† It was afterwards understood, that she was a Polish countess from Warsaw, the heroine of one of the few love intrigues in which Napoleon ever indulged.

The *duchy of Parma and Placentia*, one of the most fertile portions of the lovely vale of the Po, bounded on the north by that noble river, on the south by the ridge of the Apennines, on the east by the Enza, and on the west by the Trebbia, two tributaries of the Po, measures about 2200 square miles, and has now nearly 500,000 inhabitants. Parma and Placentia, formerly two noble republics, proud of the monuments of valour registered in the annals of their days of liberty, in 1508 were added to the territory of the church by the warlike Julius II. They were subsequently erected into an independent duchy by Paul III., who invested with them his son Pier Luigi Farnese; and remained as a possession of that family until its extinction in 1748. Then, after long wars which cost Europe more blood than the states were worth, they were adjudged to the Infant Don Philip, of the Spanish house of Bourbon. Ferdinand, heir of Don Philip, found himself involved in the catastrophe of the French invasion; and in 1802, Parma and Placentia were united to the French republic and empire, under the appellation of the department of the Taro.

Maria Louisa, enthroned in prejudice of the legitimate heir, found at her arrival a flourishing state, enriched by the gold lavished upon it during the Spanish dominion, by the comparative peace it enjoyed during the first storms of the French revolution, and by the commerce and industry awakened by the active government of the lieutenants of Napoleon. Parma, its capital, a pleasant and lively town, with a population fluctuating between thirty and forty thousand souls, lies on a smiling plain upon the banks of a small river from which it derives its name. Its frank and hospitable inhabitants have always rivalled the largest capitals in every department of intellectual culture. Under their last Spanish duke, Don Ferdinand, enjoying the blessings of an uninterrupted peace, the university of Parma had been ranked among the most celebrated of Europe. While the prince, a weak and bigoted spirit, amused himself with singing litanies and ringing bells with the monks, the people cultivated letters and arts, and Parma was honoured with the flattering appellation of the Athens of Italy.*

It was then difficult to misunderstand the course to be taken by the newly installed government. Days of repose having finally returned, the happy and liberalizing pursuits of peace were now to be resumed. Maria Louisa was perhaps by taste and inclination addicted to all kinds of refinement, and naturally inclined to declare herself a patroness of learning and art. But, had it been otherwise, the genius of the place would have prevailed over her. A taste for such accomplishments is communicated to all the foreign rulers of Italy at their first arrival. They seem to breathe it with the air of that delicious country; with the very perfume of the flowers of its fields. The university prostrated since the days of military despotism, the academy of the fine arts ransacked by the commissaries of the French government, were by the new sovereign restored in part from the ravages of the recent convulsions. Her comparatively mild government brought many conspicuous personages from the neighbouring states, and her munificent encouragement soon called all talents into exercise.

Turning her attention to more durable monuments, she laid the first stone of a magnificent bridge on the Taro, one of the mightiest of its torrents; a gigantic work, which cost her seven years of care and several millions of francs, a colossal structure of stone, with twenty arches, [illegible] half a mile in length, wide enough to give passage to four carriages abreast, without contradiction the noblest bridge in Italy, and perhaps in all Europe. This bridge being achieved, she set at liberty some twenty inmates of an ancient female convent, pulled down their cells, and raised upon the ruins a golden theatre, a splendid temple to the arts, rivalling in magnificence the Scala in Milan and the San Carlo in Naples. She bestowed upon it large sums under the title of dowry; she called around her every kind of performers, she was proud of possessing an unequalled orchestra, and since the Italians give up every thing for music, she afforded to her subjects music to their heart's content.

Her bridges, however, her theatres, her superb villas, her magnificent train, her regiments of grenadiers whom she dressed and undressed with the capricious fondness of a girl for her dolls, her profuse liberality to stage players and fiddlers, had long exhausted her finances. Commerce and industry languished; taxes pressed hard on the labouring classes, and the state ran merrily in debt. Money went to Austria under a thousand pretexts and without pretexts. It was now a tribute of vassallage, now a bargain of alliance. Manufactories were closed, as injurious to Austrian industry; steamboats were stopped, as encroaching upon Austrian commerce. Maria Louisa paid her expenses when a guest at the court of her parents; she paid the board of her son, whom they held as a prisoner. Her ignorance and submission to the commands of her father account for the mismanagement of the funds of her subjects. she could, so far, do no better;—but the enormous amount of her civil list, her foolish prodigalities, and above all her restless peregrinations, were not less fatal than the insatiable cupidity of Austria.

No sooner had the swallows of the first spring returned, than she began to feel uneasy within the walls of her palace. It was now the dream of embracing her son at Schoenbrunn, now her [illegible] at Munich, now her cousin at Naples. And wherever she went, there followed a long train of dames, pages, and grooms, horses and [illegible] dogs, parrots, and monkeys. The monarchs of Europe, made wise by recent events, had adopted an economical style of travelling, in order to enjoy more comfort and freedom, and especially to spare the purse of their subjects. The emperor of Russia was seen travelling in a modest [illegible] two, under the name of count of [illegible]; the king of Naples appeared in the north of Italy with two attendants, as the count of [illegible]: the [illegible] duchess of Parma alone kept up in her journeys the splendour of the purple. Out of [illegible] ness, her subjects and allies continued to her the title of majesty; she went through the world with the pomp of the late empress of France. The newspapers expatiated on her splendid suite and her unbounded liberalities. Her arrival was an event, her progress a triumph. While she was making so much noise abroad, her people were quietly starving at home. Yet she continued honoured and beloved by them. Her conduct was considered as the consequence of the vile policy of Austria. They believed her unacquainted with their miseries. Among the common sufferings, a word of sympathy was always reserved for her. They called her *the poor betrayed*, — *la povera tradita;* and, at her return, the warmest reception always awaited her.

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* See Botta, Storia d'Italia. Lib. II.

It was not rare, however, that some friend took pains to inform her of the true state of things. More than one appeal was made to her sensibility. There is no free press in that country, but truth knows how to find its way to the throne. One year she was preparing to set out on a voyage to Naples. She had hired a frigate of the king of Sardinia, and furnished it like the barge of Cleopatra. The harvest had been very scanty, the winter very severe. Her people murmured and groaned. On the eve of her departure, at supper, under her napkin a little note was discovered; it was in a few lines the voice of her people. Maria Louisa read and turned pale; she bit her lips, and shed tears of rage; her courtiers were confounded; but on the morrow, the *poor betrayed* was riding to Genoa, and three days after, sailing for Naples.

To these causes of public discontent, other grievances of a more serious character were added, helping to undermine her popularity. As early as the days of her triumphal entry into her states, the general enthusiasm excited in her favour had awakened the jealousy of the cabinet of Vienna. They felt as if the rock of St Helena and the walls of Schonbrunn could not assure them against the charm attached to the name of Napoleon. The family of Bonaparte, scattered, exiled, or closely watched by the police at Rome, appeared to be disarmed for all ambitious attempts. All hopes and wishes were thus turned towards her; and situated, as she was, in the centre of the boldest population of the peninsula, it seemed, that, at the first shout of emancipation, she would be placed at the head of the nation, and proclaimed regent of Italy. Austria saw this, and, with that same indifference with which she had been sacrificed to the interests of her family and given up to her enemy, it was now decided, that she should be prostituted to her courtiers, and undone in the opinion of the nations. Her ruin and infamy, we say, were resolved upon as a *coup d'état;* by which we shall be understood to affirm, that such was the confident belief of her subjects. History shrinks from the responsibility of asserting a political profligacy so atrocious.

To undo a weak and unsuspicious woman, amidst the intoxication of a loose and dissipated life, alone and unadvised, surrounded by snares and intrigues, with a warm and passionate temper, in want of some object of affection, hopelessly separated from all its legitimate objects, was but too easy. A few years had scarcely elapsed, when the report of her misconduct had already degraded her in the eyes of Europe.

Adam Halbert, count of Neipperg, lieutenant-general of Hungarian light-horse, was appointed by the Aulic council private secretary to the duchess of Parma. According to the scandalous chronicles of the times, the secretary and the lady had been long before familiarly acquainted. General Neipperg, it was said, made part of the brilliant train which escorted Maria Louisa, bride of Napoleon, to the fair destinies which awaited her in France. Be this true or not, their mutual situation in Parma could not fail to bring them soon into the closest intimacy. In affairs of state and parties of pleasure, riding, dancing, hunting, and travelling, they were constant companions. The general had orders never to depart from his mistress's side; she had orders never to move a step without him. Neipperg was a tall, fine-looking personage. His age at his arrival was not much beyond thirty. He had a bright, warlike countenance, and when seen on his left side, he was a striking type of manly beauty. In his early campaigns, in a close engagement, the lance of a French hussar had deprived him of his right eye. That honourable wound was carefully covered with a black band, and there remained charm enough in the eye he had left to win a weak woman's heart. It was but too soon, and alas! before the 5th of May, 1821,* that Maria Louisa began to prefer her groves of Sala and her parks of Colorno, to the watchful curiosity of the city. It was too soon, that her pale brow had sunk from its habitual expression of Austrian pride; that she was confined to her apartments for long intervals; that, in short, the King of Rome ceased to be without a rival in her maternal tenderness.

The report of her weakness spread. In Milan and Turin the Italians, always bold and independent in the theatre, received her with loud cheers; "Long live the countess of Neipperg." But a countess of Neipperg was living in Austria, and, by the arrangement of the congress of Vienna, Maria Louisa, in case of marriage, was to be bereft of her states. At length, however, the lovers, having found themselves both in a state of widowhood, and the cabinet of Austria having yielded its consent, with great secrecy and haste, in a small chapel at Naples, they received the nuptial benediction; and this

> "Connubium vocat; hoc prætexit nomine culpam."

The epoch of her long connection with general Neipperg was one of the happiest for her subjects. Neipperg was a man of generous and liberal sentiments. Endowed with a mild, though rather an obstinate temper, he abhorred violent measures; and, whenever he did not labour under unfavourable prepossessions, he always stood firmly for the cause of justice and truth. He was very popular. He spoke not only Italian, but even the vulgar dialects of the country; his style of living was simple; his manners affable and easy. In public calamities he was zealous and active for the cause of humanity; in public seditions he appeared alone and unarmed, disarming popular fury by the calmness of his countenance.

The days of Neipperg's administration were over too soon. In 1827, his regiment, his family, his courtiers, and the whole population attended his funeral; his helmet and sword were laid by his side; his war-horse was slain on his tomb. Maria Louisa departed for Vienna. The public voice pronounced that the count Neipperg did not carry all her affections to his grave; that he was not during his lifetime the sole master of her thoughts. We reject such accusations. But the melancholy fact is, that there was in her conduct more than enough to authorize all kinds of idle conjectures. Her good people were highly scandalized. "Daughter of the North," they were ready to say, "is it thus, that you give lessons of continence to the glowing bosoms of the sons of Italy? Is it to set such examples, that Heaven bestowed upon you a sceptre, a succession of illustrious ancestors, the glory of a beautiful name? Is it for such an occupant that we kneel before the throne, and bring the fruit of our toil to its feet; that we address prayers to Heaven for its security?"

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* The day of Napoleon's death.

Such discontents were not always expressed in whispers. The people of Parma have, in the worst of times, been famous for boldness of speech. Maria Louisa could hear their murmurs, and read their lampoons. Unequivocal marks of disrespect met her everywhere. She was indignant at it. She changed her manner towards her subjects; her subjects changed their feelings towards her; and, when the general vicissitudes of the peninsula in 1831 arrayed all the population in war against their governments, Maria Louisa had already become an object of contemptuous dislike.

The public revenues being totally exhausted, the successors of General Neipperg, worthless emissaries of Austria, had recourse to the desperate expedient of paper currency. A tremendous riot of the labouring people forced the government to abandon that measure. Tumults and mutinies sprung up among the students of the university, and several young men of the best families were arrested, and sent to a fortress in the heart of the Appenines. The pride of the highest and the interests of the lowest classes were thus equally wounded, when the national *tricolor* standard appeared on the bridge of the Enza, on the Modenese boundary, five miles east of Parma. The roads to the bridge were covered with people of all ranks, men, women, and children, walking, riding, driving to salute the *rainbow of liberty*. The young women cut up green, red, and white ribands, to make tricolored cockades and scarfs. The young men loaded their guns, and whetted the point of their poniards. Maria Louisa armed her twelve hundred grenadiers, levelled her six cannon, and harangued her troops on the square of her palace. Day and night her dragoons, with drawn swords and lighted torches, ran madly in different directions to clear the streets. There was a dead silence; no movement of the people betokened that they had any thing at stake. But horses cannot run, nor soldiers watch, for ever. After three days of such vigorous patrolling, men and beasts were exhausted and sleepy. Maria Louisa asked a reinforcement of the Austrian garrison at Placentia; the Austrian garrison replied, They had no orders.

The people peeped out at the windows. From the windows they began to shoot the dragoons as they passed; then they sallied out into the streets, and, joining in formidable bands, drove those weary squadrons before them; square after square, and row after row, the ducal troops lost ground, and the scene of the skirmishing was transferred to the doors of the palace. There the two factions stood confronting each other, each in their ranks, each under leaders measuring with their eyes the chances of the day. In that dreadful suspense, the duchess, terrified, all bathed in tears, appeared on her balcony appealing to the generous feelings of the multitude. The sight of her produced a wonderful sensation; the people started in a single mass like a single body, rushed against her guards and artillery, and drove them against the palace walls. Her army was disarmed and dispersed under her eyes; and, without firing a gun, or levelling a bayonet, she found herself at the mercy of her people.

The day being thus won for the liberals, a national guard and a provisional regency were organized. The state prisoners were liberated, and the former rulers proscribed. Maria Louisa was forced to sanction all acts by her name. After two days of feverish anxiety, betaking herself to her natural defence of tears and swoons, she obtained her release. In vain the shrewd policy of the old Carbonari remonstrated against a measure, by which the people would be deprived of an important hostage, placed by providence in their hands in case of a rupture with Austria. The chivalrous hearts of the youth who governed the insurgents were not proof against the aspect of feminine sorrow. A squadron of national guards was drawn up, one of her carriages was brought forward; and, surrounded by armed citizens in a formidable array, with tri-coloured banners waving around her, and [illegible] songs making the air ring, she was escorted for twelve miles, to the banks of the Po. There she bade farewell to subjects who loved her better the greater the distance from which they viewed her.

Meanwhile Austria had leisure to come to an arrangement with Louis Philippe. Louis Philippe said; "Let me alone, and I will leave others to take care of themselves." The Austrian battalions advanced. The first blood was shed in the territory of Parma. It had Austrian garrisons on all sides. A detachment of national guards had advanced as far as Fiorenzuola, a little town [illegible] from Placentia. They were two hundred young students from the colleges, half soldiers, half demagogues, sent to stir up the spirits of the [illegible] peasantry. Attacked in their sleep, in the dark, by a whole Hungarian regiment, with horse and artillery, surprised, drowsy, in disorder, they fought for two hours, with severe loss to their enemies. Several of them died the death of the brave. A large number surrendered, and, with a rope round their necks, were led to Placentia, to which place Maria Louisa had received orders to repair with the remains of her court.

The people of Parma were awoke from their happy dream by the news of the breach of non-intervention. But they were not dismayed. Eight young men set out in disguise with [illegible], went across a portion of disputed territory, and by a daring *camisado*, laid hands on the person of the bishop of Guastallo, an Austrian prelate, the confessor of Maria Louisa, and one of her favourites; and from the heart of his diocese, from the quiet of his palace, they drove him in triumph to Parma, where he was surrounded with guards and kept as a hostage. He was compelled to write a letter to the duchess, in which he assured her, on the part of the rebels, that the touching of a hair of the head of one of her prisoners, would be the signal for him to ascend the gallows. Maria Louisa, out of kindness to her spiritual director, set her captives at liberty, and his [illegible] was accordingly dismissed. He took his flight beyond the Alps, not stopping until he saw himself among his friends at home, whence he could never be induced to return.

The provisional governments ruled with [illegible] and moderation, but answered very [illegible] to the enthusiastic confidence of the young. They saw how hopeless any resistance to Austria must prove. They made all efforts to persuade the [illegible] lute, that the days of chivalry were over; and it was now a proof of patriotism to submit, to yield to an unconquerable fortune, and wait for better days.

On the 20th of March, at break of day, a thick, close column of eight hundred Austrian infantry appeared at the eastern, and six thousand at the western gate. The most obstinate champions had been dragged by main force, by their parents and friends, from the gates where they had sworn to fight to the last, and the Austrians entered undisturbed.

Maria Louisa returned to her metropolis, to her silent and sullen metropolis. Shops and windows were shut up; at the theatre some of her courtiers raised the cry, "Long live Maria Louisa;" but the theatre was still as death. She confined herself to her palace, surrounded by Austrians, and proceeded against the rebels. None could be arrested but those who refused to fly. They were dragged before a regular tribunal, and judged according to the laws of the country. They underwent a long nquisition, but no crime could be proved against hem. No witness could be found to testify, no udge to pronounce a conviction; the witnesses and udges were Italians. Maria Louisa proclaimed an mnesty, in which she excepted only twenty-one ndividuals, against whom she entertained a personal antipathy. Rome and Modena proscribed their ubjects by thousands.

Meanwhile, schooled by misfortune, the duchess imited the number of her servants, gave up travelling and building, and sold part of her jewels. Private and public chagrins preyed upon her mind. One of her favourite ministers was stabbed in road daylight in one of the most populous squares. ler Austrians had daily quarrels with her Italians. arthquake, famine, and cholera, successively avaged her states. The people murmured, as if e had been guilty of all public calamities. She as called to Vienna, after a short lapse of time, o see her first-born pine slowly, and die in her rms. A few years afterwards, she received the st breath of the emperor, her father. Her health, dermined by the long indulgence of a disorderly fe, was now shaken by the repeated strokes of versity. She had lived too fast; she had soon ached her end. We know but little of the parculars of her death. It took place in 1837. ccording to the statement of the newspapers in hich the event was announced she appeared to ave died at peace with heaven, and pardoned by r subjects.

MATLOCK; a village and parish in Derbyshire, ith a population in 1831 of 3262. The village finely situated on the eastern bank of the river erwent, 144 miles from London, and 42 from anchester. The church, an ancient building, dicated to St Giles, is romantically situated on the dge of a rock; living, a rectory; patron, the dean Lincoln. The inhabitants are chiefly employed the cotton manufactories and leadmines in the ighbourhood. *Matlock Bath*, about a mile and half S.S.W. from the village, may be considered a distinct village of modern date, it having iginated since the discovery of the tepid mineral rings here, or rather since the period when they quired reputation, which was about 1698, soon er which they were enclosed, and buildings were ected near them for the accommodation of visitors. here are three bathing establishments, namely, e Old Bath, the New Bath, and the hotel. Hot, cold, vapour, and shower baths have also been fitted up for public use at the base of the rock, called the Heights of Abraham, and these are termed the Fountain Baths, from an ornamental fountain which has been formed in the garden. Many of the inhabitants are employed in converting the spars or calcareous incrustations found here into ornamental articles.

MAUCHLINE; a town and parish in the county of Ayr and district of Kyle. The parish is about seven and a half miles in length, and from two to four in breadth. Formerly, it was of much greater extent, embracing the whole of what now forms the three parishes of Mauchline, Sorn, and Muirkirk. Before the reformation, the lands of Mauchline belonged to the monks of Melrose, but in 1606, they were granted to Hugh, lord Loudon, and the town of Mauchline was erected into a free burgh of barony. In 1631, the district which now forms the parish of Muirkirk was detached from Mauchline, and in 1636, the district which now forms the parish of Sorn was also detached, and both made separate parishes, thus reducing the parish of Mauchline to less than a fifth of its former magnitude. The soil of Mauchline is in general good, though, except in a few favoured spots, it is more noted for the excellent quality, than the abundance of its agricultural produce; there is only one small patch of moss-ground in the parish, that which still marks the place where, in 1648, was fought the battle of Mauchline-muir. Coal exists in the district, though from the manner in which its strata are broken up by a ridge of hills, its position is somewhat uncertain, and none is wrought at present. Abundance of fine red sandstone is found in the parish, of which most of the houses are built. The land is divided into farms of a moderate size, averaging about 100 acres each. This parish possesses much picturesque beauty. From the top of Mauchline hill, which terminates the long ridge of Kyle, a pleasing prospect may be obtained on both sides; more particularly towards the west may be seen Mauchline village, beautifully situated at the foot of the hill; the ground thence finely sloping towards the Ayr, which, at the bottom of the valley, winds it way through the woods "on to the sea;" the mansions of Ballochmyle, Kingencleugh, and Netherplace, with their surrounding woods, adorn the more immediate prospect, while beyond the Ayr, the scene, enriched with the finest forests, stretches away towards the hills of Carrick and Galloway. The water of Ayr forms the boundary of the parish for several miles, only a small district of it being situated beyond the Ayr, at the influx of the Lugar. The Ayr pursues its course between banks, now of high and precipitous rocks of fantastic forms, now opening up into fine haughs and valleys, and being everywhere clad with wood, which grows to its very margin, and finds root among its time worn rocks, it presents alternately scenes of romantic grandeur and of beauty. The "braes of Ballochmyle," and the "hermit-fancied coves" of Barskimming, have obtained an enduring place in the immortal verses of the Ayrshire poet; and though his genius had its birth amidst other scenes, yet those in Mauchline, it must be allowed, were a "meet nurse for a poetic child."

Among the antiquities existing in the parish may be mentioned, a portion of the old castle of Kingencleugh, which John Knox is said to have visited, and where he dispensed the sacrament, it being then the residence of Campbell of Kingencleugh, a zealous friend of the Reformation, and of the Reformer. The old walls are carefully preserved by Claud Alexander, Esq. of Ballochmyle, the present proprietor. Another relic of a still more ancient age, and in better preservation, is a square portion of the old monastery of Mauchline, in which there is still a large room with a groin-arched roof in fine preservation. To this tower has been annexed Mauchline castle, where dwelt Gavin Hamilton, Esq., the friend and patron of Burns, which is still the residence of the descendants of that gentleman. The ashes of several of the martyrs of the covenant rest in the church-yard, and in Mauchline green.

The *town* of Mauchline is situated near the northern bank of the river Ayr, sixty-two miles distant from Edinburgh, thirty from Glasgow, and eleven from Ayr. The road from Glasgow to Dumfries, and that from Ayr to Edinburgh, intersect one another in the middle of the village. It was formerly a burgh of barony, but the charter having been lost, its privileges have never been renewed. It derives importance as the centre of a rich agricultural district, and must always continue an object of interest as, *par excellence*, the village of Burns, where he spent his early manhood, where he obtained his wife, and where some of the scenes of his happiest poems are laid. The farm of Mossgiel lies about half a mile to the north of the town. The farm-house has been scarcely altered since it was left by the poet. The old church of Mauchline was built in the twelfth century, and after having been the place of the stated devotions of the parishioners for many generations, and on certain occasions of the religious services of assembled multitudes, was taken down in 1827. The present church, which is a remarkably elegant structure, mostly of the modern Gothic style, was built on its site and opened in 1829. It stands surrounded by the church-yard, near the centre of the town. The road from Kilmarnock to Dumfries passes through the village by a wide Macadamized way, opened in recent times, but already lined on either side with well-built houses, and though the old causewayed and narrow streets through which formerly lay the thoroughfare be honoured by fewer passengers, they, with many of the houses celebrated by Burns, remain in nearly the same state as when visited by the poet.

Besides the usual employments pursued in a country village, there is one manufacture in Mauchline which deserves to be noticed as having been carried to an extraordinary degree of perfection. This is the snuff-box manufacture of W. and A. Smith. It was commenced for the first time in this village, by the present proprietors, with a single workman; it now affords regular employment to between fifty and sixty persons, implying a weekly expenditure of about £50. Here are manufactured not only snuff-boxes, but every article in the fancy cabinet line, ornamented with paintings in a variety of styles, from correct copies of ancient and foreign art, missal-work, and the gorgeous scroll-work of the era of Louis XIV., with the most minute and faithful copies of the works of living artists. The manufacture bears witness, in all parts, to the admirable ingenuity and taste of Mr Andrew Smith, by whom it is conducted. Among other inventions of this gentleman for giving neatness and facility in the execution of the work, may be mentioned an instrument which he calls the Apograph, by which pictures of all kinds may be reduced to suitable dimensions, with the greatest minuteness and accuracy. The best artists are engaged; they attain a remarkable perfection in the peculiar work in which each is employed, whether painting or manufacture, and form a class of ingenious and intelligent persons. The principal depot of the manufactory is at Birmingham, where Mr W. Smith, the senior partner, resides. This has been an object of interest and patronage to the neighbouring nobility and gentry; and work-tables, boxes, &c. have been ordered from this village to the palaces of even foreign monarchs. So favourable was the account which the present marquis of Hastings gave of this manufactory to the late king William IV., that the Messrs Smith were in due form appointed box-makers to his majesty. Population of town and parish of Mauchline in 1821, [illegible], in 1831, 2232.

MAVOR, William, LL.D., rector of Bladon-with-Woodstock, and vicar of Hurley, Berks, was born on the 1st Aug. 1758, in the parish of New Deer, Aberdeenshire. He left his native country at an early age; and when no more than seventeen he officiated as an assistant in an academy at Burford, in Oxfordshire. He subsequently established himself in a school at Woodstock; and, having been employed to instruct the junior branches of the noble family at Blenheim in writing, he obtained so much favour as to get a title for holy orders in 1781. In 1789 the duke of Marlborough gave him the vicarage of Hurley in Berkshire, which he retained until his death; and in the same year the degree of doctor of laws was conferred upon him by the university of Aberdeen. He was afterwards presented by the duke to the rectory of Stonesfield in Oxfordshire, which he resigned, and in exchange obtained the rectory of Bladon-with-Woodstock. As a magistrate for Oxfordshire his conduct was exemplary and useful; and his brother townsmen evinced their good-will and confidence by nine times electing him to the office of mayor. He died on the 29th Dec., 1837, aged eighty. The following is a list of his publications: The Springs of Parnassus, or Poetic Miscellanies, 1779, 8vo. Universal Stenography, or the Art of Short-hand, 1779, 2nd edition 1785, and several later editions. Poetical Cheltenham Guide, [illegible]. The Geographical Magazine, published under the name of Martyn, 1781, two vols. 4to. Dictionary of Natural History, under the same name, [illegible], 2 vols. folio. Elegy to the memory of Capt. James King, 1785, 4to. Blenheim, a poem, to which is added a Blenheim Guide, 1787, 4to. New Description of Blenheim, 1789, 8vo.; many subsequent editions. Vindiciæ Landavensis, or Strictures on the Bishop of Landaff's Charge (Bishop Watson), 1792, 4to. Poems, 1793, 8vo. Christian Politics, a Fast-day Sermon, 1793, 8vo. Appendix to the Eton Latin Grammar, [illegible], 12mo. The Youth's Miscellany, or a Father's Gift to his Children, 1797, 12mo.; reprinted in two volumes, 1805. The Duty of Thanksgiving, a Sermon, 1797, 8vo. Historical Account of Voyages and Travels from the time of Columbus to the present period, 1798—1802, 25 vols. The British Tourists, or Traveller's Pocket Companion through England, Wales, Scotland, and Ireland, [illegible]—1800. A series of Tours, by several authors, in 6 vols. 12mo. The British Nepos, or Lives of Illustrious Britons, 1798, 12mo. Elements of Natural History, for the use of Schools, [illegible], 12mo.

Young Gentleman and Lady's Magazine, 1799, 2 vols. 12mo. The Lady and Gentleman's Botanical Pocket-book, 1800, 12mo. A selection of the Lives of Plutarch, abridged for Schools, 1800, 12mo. The Modern Traveller, with Illustrative notes, 1800, 4 vols. 12mo. Classical English Poetry for the use of young persons, 1801, 12mo. edited in conjunction with Mr Pratt. The New Speaker, or English Class Book, 1801, 12mo. The English Spelling-book, 1801. Universal History, Ancient and Modern, 1802, 25 vols. 18mo. The Christian Panoply, a Fast Sermon, 1803, 8vo. The History of Greece, 1804, 2 vols. 12mo. The History of Rome, 1804, 3 vols. 12mo. The History of England, 1804, 2 vols. 12mo. Proverbs, or the Wisdom of All Nations, 1804, 12mo. Holmes's Rhetoric improved, 1806, 12mo. A Circle of the Arts and Sciences, 1808, 12mo. The Eton Latin Grammar, with explanatory notes, 1809. General View of the Agriculture of Berkshire, 1809, 8vo. The Mother's Catechism; or first principles of Knowledge, 1809. Catechism of General Knowledge, 1809. The Catechism of Health, containing rules for the management of children, 1809. Collection of Catechisms, 1810, 2 vols. Abridgement of Bourgoanne's State of Spain, 1812, 12mo. A new edition of Tusser's Points of Husbandry, 1812, 4to. The Fruits of Perseverance, three sermons on public occasions, 1814, 8vo. Many of these works, particularly his spelling-book and others formed for the purpose of education, have from the time of their publication been exceedingly popular and successful. But one of the most pleasing of his publications was a selection from his former writings, with general moral reflections derived from his long experience of the human character, which appeared in 1829, under the title of "Miscellanies, in two parts, 1. Prose, 2. Verse, &c." To this his portrait is prefixed.

MAY, Isle of, a small island on the east coast of Scotland, at the mouth of the Frith of Forth, lying between East Lothian and Fife. It is about a mile in length and three quarters of a mile in breadth, being precipitous towards the west, but gradually declining to the east, and affording good pasture for sheep. Before 1816, a rude species of light, consisting of a chauffer of coal on the summit of a tower, continued to be burned here, as a warning to mariners, but in that year a commodious light house was completed, capable of accommodating the families of two keepers. The beacon resembles a star of the first magnitude, and may be seen at the distance of about seven leagues. It is situated 240 feet above the level of the sea, in lat. 56° 12′ and long. 2° 36′ west from London.

MAYBOLE (originally *Minnibole*); a town and parish in the county of Ayr and district of Carrick. The parish is about twelve miles in length and seven in breadth; it is watered by the rivers Doon and Girvan; the surface is hilly, but fertile. The town is agreeably situated on rising ground, with a southern exposure, distant from Edinburgh eighty-one miles, from Glasgow forty-four, and from Ayr nine. The streets are narrow, but contain a number of fine old mansions, formerly the winter residences of baronial families. One of the finest of these is the mansion-house of the Cassilis family, usually called "the castle." In one of the apartments of this castle was confined for many years the countess of Cassilis, renowned in ballad song as having eloped with the celebrated gipsy Johnny Faa. In the tavern of the "Red Lion" is shown the room where Knox and Kennedy, the abbot of Crossraguel, had a famous public dispute on the merits of the mass. The inhabitants of Maybole are chiefly employed in hand-loom weaving for the Glasgow houses. Population of parish in 1831, 6287, of which one-half were resident in the burgh.

MAYNOOTH, a small town in the county of Kildare, Ireland, distant from Dublin fifteen miles W. by N. The royal college of St Patrick, for the education of persons professing the Roman Catholic religion, was founded here in 1795, conformably to an act of parliament then passed. Before its erection, the Roman Catholic priesthood of Ireland were educated in foreign countries, and it was supposed that this might have a tendency to attach the priests to those powers under whom they were trained. To obviate such a contingency the establishment was formed. It consists of two departments, lay and ecclesiastical. The course of study comprehends humanity, logic, mathematics, divinity, and modern languages. Five years are generally allotted to the attainment of knowledge in these branches of learning, and examinations of the students are held twice in each year. The principal officers are the president, vice-president, dean, bursar, subdean, eleven professors, three lecturers, and a treasurer. The number of students amounts to 330. The ecclesiastical establishment is supported by annual parliamentary grants. The lay college depends upon subscriptions, and was opened in the year 1802. The building is extensive and convenient. It consists of a centre and wings, extending 400 feet in length, and containing a chapel, library, refectory, dormitories, &c. It was erected at an expense of £32,000. Maynooth has also a charter-school for fifty girls. Population of parish 2622, of which 2053 are in the town.

MAYO; a maritime county in the province of Connaught, Ireland, lying between 53° 27′ and 54° 19′ N. lat. and between 8° 31′ and 9° 20′ W. long. It extends from east to west seventy-two statute miles, and from north to south fifty-eight. According to Mr Griffith's statement, it consists of 1,355,048 acres, of which 871,984 are cultivated, 425,124 are bog or irreclaimable mountain, and 57,940 are under water. The surface of the county is very diversified. The eastern part contains extensive plains, but the western part is wholly mountainous and covered mostly with bog. The principal mountains are Muilrea in the south, 2733 feet high, and Croagh-patrick, on the southern shore of Clew Bay, 2528 feet high. The only navigable river in the county is the Moy, but it possesses a number of lakes and small streams which abound in fish.

Agriculture is in a less advanced state here than in most other parts of Ireland, but vast herds of cattle are reared upon the extensive mountain pastures, and great quantities of flax and oats are raised: the latter for exportation. Here are extensive plains, called in Irish Turlachs, not having any apparent communication with lakes or rivers. In the winter time they are inundated, but in summer become rich and firm pasturage, the waters rising and retreating through the rocky interstices in the bottoms. The prevailing rocks are granite, gneiss, mica slate, quartz, greywacke, porphyry, ironstone, limestone, green serpentine, of a beautiful variegation, and quarries of black marble and slate. The slate quarries are well situated for exportation, being adjacent to the Killeries harbour.

Besides agriculture, many of the inhabitants are employed in the sea-fisheries. The manufactures are mostly confined to articles for home consumption, such as linens, flannels, woollen stockings, and straw hats. The baronies into which the county is divided, are nine in number, and called Burrishoole, Carra, Clanmorris, Costello, Erris (Half), Gallen, Killmaine, Morisk, and Tyrawly. The principal towns are Newport-Pratt and Westport, two prosperous sea-ports, seated upon Clew Bay; Castlebar, Claremorris, Ballaghadareen, Foxford, Swineford, Shruel, Ballinrobe, and Ballina. The assizes are held at Castlebar, and quarter-sessions at Castlebar, Westport, Ballina, Claremorris, and Ballinrobe. Mayo returns two members to the imperial parliament. In 1837 the constituency consisted of 1350 voters. Population in 1831, 366,328.

MEDICAL PROFESSION. The relation in which this profession stands to society at large, and the estimation in which it is held, are in some respects peculiar to it. As a community, physicians are, more than most classes of men, made the butt of ridicule, and not unfrequently the subjects of sweeping and unsparing censure, while as individuals, no class of men are more honoured and trusted. Ignorance, conceit, or bigoted devotion to visionary theories, indifference to human life, and a sacrilegious disrespect to the dead, are freely and generally charged upon them as a body; but individually, they are as generally esteemed, each in his own particular circle, with peculiar affection and regard. Happily for the profession, every man excepts his own personal physician from the suspicions with which he views the rest of his fraternity, and then, as if to make amends for his injustice to others, tacitly, and perhaps unconsciously, attributes to him the distinguishing excellence of having resisted peculiar temptations, to which most others in his situation have yielded. Now, as a man's character among those to whom he is personally known, is of incomparably more consequence to him than his general standing with the world at large as a member of a particular community, it follows that this general prejudice against physicians in its practical operation, is in some respects rather beneficial than injurious to them individually. It fixes a lower standard of merit, by comparison with which each physician is judged; and consequently, it requires less absolute merit to obtain for him among his acquaintances the reputation of pre-eminent worth. Nor does the general prejudice against the profession take away the disposition to apply to a physician in case of need. It is almost always found, that those who when in health are the loudest and most ready in their censure of physicians, are the most prompt in seeking their assistance in sickness; and if they are sometimes troublesome patients, it is not from an unwillingness to trust themselves to professional skill.

But if the primary effects of this prejudice are in some respects favourable to individual physicians, it does not thence follow, that its influence on the whole is either salutary or unimportant. On the contrary, it is obvious, that whatever diminishes the confidence of the public in the profession, takes something from the respectability and influence, and consequently from the means of usefulness of each member. The evil may be in a great measure counteracted by the predilection for particular physicians, of which we have just spoken, and there may be individuals, who will entirely surmount it by the elevation of their own character; but in an extended view of the whole subject it cannot be doubted, that both the profession and the public must suffer from an unworthy estimation of physicians, whether there be just cause for it in the condition and character of the profession or not.

The principal effects, unfavourable to character which have been attributed to the influence of the medical profession, may be resolved into the two following, viz., a bigotted attachment to authorized modes of practice, and a peculiar sensitiveness of feeling, or readiness to take offence for slight causes. The former renders physicians unwilling to receive information, or to adopt improvements in practice, however valuable, unless they come through the regular channels of scientific investigation, or established theories; the other disposes them to frequent jealousies and quarrels among themselves. There is, indeed, a third, which charges the profession with a want of scrupulousness in regard to the means of acquiring new kinds of knowledge; but of this we do not propose to speak.

Every one must have observed, how frequently remedies are introduced by men who can make no pretensions to regular professional knowledge, for diseases which often baffle the science and skill of educated physicians. We speak not of the infallible, universal remedies, the panaceas, and the catholicons, which are blazoned forth by deception and falsehood, to impose only on the ignorant and credulous. We refer to the more modest discoveries of the means of curing particular diseases, which have obtained the confidence, sometimes founded upon an experience of their benefits, of intelligent and educated men. The effects which sometimes follow the use of such remedies, are not a little surprising; and occasionally they bring no small share of reproach and ridicule upon the profession and its regular practitioners. The lame man, whom a long attendance of the most skilful surgeons has failed to cure, is made to walk by a few applications from the hands of a blacksmith. and a bookseller, by a single word, can teach the dyspeptic to forget his indigestion, laugh at the doctor, and throw away his physic.

Physicians it is true, give little credit to all these things. They rarely adopt remedies thus irregularly introduced, and still less frequently do they acknowledge their efficacy. This incredulity of the faculty, however, does little to diminish the confidence of the public. It rather gives point to their sarcasms upon the profession. If discoveries are made in the art of curing diseases, which physicians with all their learning have not the capacity to make, (and we hear little of discoveries of this kind by regular members of the [illegible] argues little for their candour or learning. [illegible] they can perceive no merit in them.

Such is the view which many intelligent and educated men take of the conduct of the medical profession towards irregular practitioners, and their irregular practices. But we cannot readily [illegible]esce in the correctness or justice of this view. [illegible] do not deny, that remedies are often introduced [illegible] men who are not physicians, which acquire no [illegible] share of popular confidence. Neither will we deny, that such remedies are sometimes [illegible] efficacious. So frequently is this the case, [illegible] some remedy of this sort is almost [illegible] before the public, and those who pay little [illegible] tion to the matter, are hardly aware that they do not obtain a permanent reputation. Hence, they are ready to believe, that there may be some complaints, which quacks can cure better than physicians. It is worthy of remark, however, that the particular remedy in favour, is never for any considerable length of time the same. At one time it is a cure for consumption, at another for rheumatism, at another for dyspepsia, or it is a panacea, and cures every thing. Each has its day, and passes by and is forgotten; or else like a worn-out fashion, it descends from the higher to the humbler walks of life, to struggle on, by the aid of interested puffs and forged certificates, a little time longer. Whether it be that the cures which give it celebrity result only in temporary relief, or that its failures, or its injurious effects, as well as its cures, at length creep into notice, or that the mystery which attended its introduction being dissipated, it proves to be but an old remedy with new pretensions, we stop not now to inquire. The truth of the remark itself will not be disputed by any who have made themselves at all conversant with the subject. This circumstance alone is enough to show what degree of importance is to be attached to remedies the reputation of which is so evanescent, and to free the physician from any just imputation if he is not in great haste to adopt them before their merits are tested, notwithstanding the high-sounding promises with which they are introduced to notice.

It were easy to explain, how it may happen that a remedy shall acquire for a time a high reputation which it does not possess merit enough to sustain. This circumstance is by no means peculiar to the remedies of irregular practitioners. The whole history of the medical profession is full of analogous instances. The habits of rigorous investigation which prevail at the present day in all the sciences, do not indeed now suffer inefficient medicines to acquire a very general reputation. But there have been times, when medicines have been in very extensive use, which are now universally regarded as nearly or quite inert.

No one but a physician (and it is scarcely possible even for him) can sufficiently appreciate the difficulty of discriminating between the effects of remedies upon a disease, and the spontaneous changes of the disease itself. Most diseases have a natural tendency to disappear, sooner or later, of themselves, if not improperly interfered with; and those which have not this tendency often undergo changes, which are unexpected, and for which no specific cause can be assigned. Hence it happens, that the reputation of curing a disease, or of making a great impression upon it, is ascribed to a medicine simply because its use had preceded one of these spontaneous changes. Often, while a physician is congratulating himself upon a successful prescription, he finds that although his patient is cured, his medicine, from some accident, was not administered.

How, then, it will be asked, are we to judge of the value of remedies, if not by their effects? Certainly from their effects;—but not as they are observed in a solitary case, and in a general manner, in reference only to a final result. There must be a series of observations in which the phenomena are compared in the several cases, and the influence of each remedy observed, upon the particular symptoms, as well as its general effect upon the disease as a whole. And before the evidence can be regarded as complete, these observations must have been repeated by different persons, in order that allowances may be made for the influence of a natural partiality for a newly discovered or favourite remedy.

Few, if any, empirical remedies are ever subjected to a trial like this. The secrecy which is observed in regard to their true character, and which is secured, or aimed at, by oaths and subscriptions in some cases, and by variations in the composition of the medicine, to elude the results of analysis, in others, necessarily prevents a full investigation of their real merits. It is a fair inference, that the authors of these remedies are not unconscious that such an investigation would not enhance their reputation. Undoubtedly they act wisely, in respect to the accomplishment of their purposes, in insisting upon this secrecy, notwithstanding the unfavourable inferences to which it subjects them. The mystery, which attends the concealment, forms no small part of the causes of their success.

In the profession, no such concealments are practised or permitted. The whole profession and the public are considered as fairly entitled to the fruits of the knowledge of all its members; and if valuable observations or discoveries are made by any, they are freely communicated for the general good. Their knowledge is thrown into one common stock, from which each may draw according to the wants of his patients, and his own skill in applying it; but which no one is permitted to appropriate exclusively to himself. The profession does not recognise the right of any individual member to hoard up his discoveries, whether real or pretended, for his own private emolument. Among liberal, educated men, it is not to be supposed that any such attempt will be made. But if any one should act so unworthily, he would be at once excluded from the profession. Hence the reason, that none of the boasted discoveries of universal or specific remedies are made by physicians. The name of some distinguished physician is indeed often attached to them; but it is done without his consent or approbation.

Whenever the composition of a secret medicine has been made known, it has almost always turned out, that it contained no agents, which had not been before known and in use among physicians. Some unimportant modification of their composition, and a general and confident administration of them without regard to the particular character of the disease, constitute its only peculiarity. The same thing is nearly true, in regard to all the external remedies, the different modes of applying friction and fermentations, which have of late become so fashionable. Physicians do not rely upon these so exclusively, as do some empirics, and as they cannot generally go through the mechanical operation themselves, they may not always give the full effect to their application of which it is capable; but there never has been a time, from the age of Hippocrates to the present day, when they have not been regarded as important auxiliaries in the cure of diseases.

In chronic complaints, remedies lose much of their efficacy when the system has become accustomed to their action, so that almost any change, or even leaving off medicine altogether, will many times produce some degree of improvement, which is indeed often only temporary. Practitioners of experience are well aware of this, and regulate their practice accordingly; but we have not unfrequently seen a young physician elated with the expectation of accomplishing a cure where older men have failed, because his first prescriptions have produced such an alleviation of the disease. Many of the cures supposed to be effected by newly-discovered remedies may be accounted for in this manner. While the application is recent, it is extensively spoken of, and reported as an effectual cure; at length the system becomes accustomed to the remedy, and its effects cease. But in the mean time the novelty of the subject has passed away, and the ultimate failure of the remedy is little known. An attentive observer may remark, however, that it is in general the same individuals who are cured, over and over, by the succession of new remedies which are from time to time in vogue.

These different considerations will sufficiently explain why it is, that physicians are habitually incredulous in regard to the wonderful healing powers, so often ascribed to accidental discoveries in medicine. They have so much occasion to know (and this knowledge is but too often taught them by disappointments in their own practice) the difficulty of applying a remedy suited to the peculiar state of the system in each stage of a protracted and complicated disease, with all the advantages that science and experience can afford, that it cannot be supposed, that they will place much confidence in the chance operations of ignorant and presumptuous empirics.* It may be, that this incredulity, and the contempt for quacks and quackery, which it involves, is sometimes carried to an extreme. It is not our purpose to defend or apologize for physicians; but to trace out the causes of some of the peculiarities of character which the profession exhibits. We may remark, however, that it demands no great stretch of charity to find some better motive for the repugnance of physicians to countenance uneducated practitioners, and their remedies, than the illiberal selfishness not unfrequently imputed to them.

We wish we might hope to come to a result equally favourable to the character of the Medical Profession, in regard to the other point which we noticed. But it cannot be denied, that physicians exhibit a sensitiveness and jealousy of temper, especially in their intercourse with each other, far greater than is met with among other educated men. However amiable they may be in every other respect, and they have perhaps a full proportion of amiable qualities in general, if we touch them on a point of professional etiquette, we find ourselves treading upon corns. In many places, this *noli me tangere* sensitiveness embitters the happiness of medical men, and not unfrequently impairs their usefulness. The causes of this peculiarity are to be found in the nature of the relation between the physician and his patient. This relation is founded altogether upon the confidence which the patient places in the general character and faithfulness of his physician. The intercourse of the physician with his patient is not a mere cold, business matter, but is connected with some of the strongest and tenderest feelings of the human heart. And if there be something like affection in the feelings of the sick towards their physicians, there is often, by a natural consequence, not a little proneness to jealousy. The excited state of mind, produced by sickness and suffering, while it increases the susceptibility to the attentions and sympathy of the physician, adds also to the sensitiveness of any omission, whether real or apparent, and opens the ear to any unfavourable suggestion, however slight.

All this takes place in seclusion and private. If any coldness or distrust have arisen, it is unknown to the physician, until he finds that another is called in his room. Hence he watches with anxiety every thing that looks like an indication of it, and becomes apprehensive of every thing that may tend to produce it; so it is also in the intercourse between physicians themselves. If they were brought into frequent and open contact, whatever jealousies might arise would be exposed and removed. If quarrels sometimes grew out of them, they would neither be rancorous nor lasting. But in the secluded manner in which they, in most instances, necessarily live in regard to each other, the whisperings of jealousy operate secretly for a time, and then, like the smothered fire, burst forth with greater violence.

Having said thus much of these traits in the character of medical men, which are not always the most amiable, it is but justice to the profession, that we should notice, although we must do it briefly, one which is in every point of view creditable to them. Whatever faults or foibles may be attributed to them, it is, we believe, universally allowed, that they are distinguished for their beneficence to the poor. This is not merely the character of distinguished individuals in the profession, or of a considerable number, or a majority of individuals; but of the profession as a body. So much, that any physician, who should not partake of it, or at least assume it, would lose his reputation and standing. The poor man, however destitute of the means of making compensation, calls for medical aid, with the same confidence that his call will be answered, as the richest man among us. He may go hungry, or ragged, or cold, because he has not the means to purchase food, clothing, and fuel, or is unwilling to buy them; but if he be sick, he need never be in want of medical advice. Boerhaave is said to have called the poor his "best patients." Happy the young physician who can now so regard them!

It may be said, that there is little merit in benevolence, which is thus rather forced upon the profession by circumstances, than sought by their own choice. This may be in a degree true as regards individuals; although the habitual performance of benevolent deeds, from whatever motive they may have originally proceeded, can hardly fail eventually to excite some corresponding affections in the temper and disposition of the mind. But with respect to the profession as a whole, no such compulsion has ever been, or ever could be exerted upon it, from any circumstances external to it. The custom of attending the poor gratuitously has now grown, by long usage, into a sort of [illegible] law, which the whole profession combined, [illegible] so much disposed, could hardly abrogate. [illegible] has grown out of the character of the [illegible] itself, and of that of its members. If [illegible] physicians are bound to take shame to [illegible] for the jealous disposition towards each other which the circumstances and habits of their profession have entailed upon them, they may well be allowed as an offset against their mortification, some pride in their cheerful compliance with the benevolent customs which they have inherited with it.

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* To use *external* remedies only, the same extent of knowledge is not requisite as to prescribe internal medicines. It is often as difficult to decide when medicines are necessary, as to determine what they shall be. It may be here observed, that, in respect to pecuniary profit, quacks are a positive benefit to regular practitioners; the amount of disease which is removed by their means being much less than the increase occasioned by their mismanagement, and by the neglect of proper remedies caused by them.

In England, the chief reliance for the regulation of the profession, is upon the direct provisions of the laws, enforced by penalties, which, in some instances, are severe. The design of the chartered privileges is to secure the community against the ignorance and impositions of empirics. But in attempting this, they have in effect established a difference of rank and of privileges in the profession itself; and this is not always conformed to the distinctions of scientific and professional merit. The London college of physicians, for example, whose powers and privileges, as granted by charter, are xceedingly ample, have established it as a by-law, which no force either of persuasion or compulsion has been sufficient to induce them to relax, that no physician shall be elected a fellow of the college, who has not taken a doctor's degree at one of the English universities, Oxford or Cambridge. This same college has the power (a power which it has on several occasions shown itself sufficiently disposed to exercise) to punish by fine and imprisonment, any man who shall attempt to practise medicine in London, or within seven miles of it, without a license from its own board of censors. The law, however, compels them to grant the license upon receiving proof of a sufficient education, at whatever school it may have been obtained. The advantages for a medical education at the universities are incomparably less than they are in London and Edinburgh, and in some of the schools on he continent, to which many English students esort. As those who have the greatest portion f enterprise and ambition will resort to those chools which offer the greatest advantages, it follows, that a large proportion of the licentiates in practice, must be men of a higher character and a beter education than those who hold the higher itle, and enjoy the extended privileges of fellows. Still more inevitably does it follow, that there must be perpetual jealousies and collisions between the two classes of physicians. But this is ot all. There is still another class of practitioners more numerous than either of these. By the harter of the college of physicians, as we have aid, none but a licentiate of that college is permitted to practise medicine. More than a hundred ears ago, the college attempted to enforce the aw against an apothecary, who had visited a sick an, and given him medicine, by which he was ured, without charging a fee. The house of ords, on an appeal from the king's bench, decided that this was not practising physic, within he meaning of the charter, and thus opened the oor for all apothecaries to follow the example. They were of course not slow to avail themselves f the privilege; and in a short time, a very large roportion of the medical practice passed into their ands, while that of the regular physicians defined to little more than consultation.

The whole history of this change is curious nd instructive; and singularly illustrates the ffect of relying upon legal protection in disregard o the influence of public opinion. It needs no etailed history of the transaction, to show, that t the time when it took place, there was a demand on the part of the community for a more popular class of practitioners, which the law itself could not resist. Whether it was, that the number of physicians was too small, or what is more probable, that relying upon their legal privileges they demanded more compensation or deference in return for the exercise of their profession, than the public were willing to concede, is of little moment. Nothing but such a necessity as we have supposed could have induced the house of lords, by its decision, and the public by submitting to it, to do away by a mere fiction of law, with the express stipulations of the royal charter, sanctioned as they were by an act of parliament. That it was no better than a fiction, is shown both by the nature of the question, and by the subsequent events. For more than a hundred years, the apothecaries in England have performed the duties, which in other countries are performed by physicians. The apothecary visits the patient, and determines what his case requires; and the only real distinction between him and the physician is, that instead of writing his presciption and sending it to a shop, he supplies the medicine himself, and then, by a degrading subterfuge, evades the law, by charging for medicine only, and obtains compensation for his personal attendance, either by an enormous charge for his medicines, or by a sort of voluntary contribution, which custom has rendered legal. Even this yoke of humiliation is now taken from the necks of the apothecaries. As they have provided for the education of the members of their company, the court in 1830 decided, that it is absurd to regard them as mere mechanists, and that they have the right to demand a fee for the mental labour of prescribing the medicine, as well as for the mechanical labour of preparing it.

What are the precise distinctions in the legal rights of this department of the profession, we do not exactly know. But it will readily appear, that here is a third rank in the profession, entitled to, and aiming at, and not unfrequently obtaining, general confidence and employment, as practitioners of medicine. It is sometimes not a little amusing, to witness the struggle between them and their more privileged and higher-titled brethren. While the physicians uniformly speak of them as an inferior class, they seemed disposed to forget their origin. They have dropped the name of apothecaries, and commonly style themselves *general practitioners*. Although they have thus brought themselves into notice and favour, not only without, but in defiance of, the provisions of charters and statutes, we find them no less than their older brethren, relying upon such provisions, for the defence of the privileges they have obtained. They, too, have now their chartered company; and we find by some of the journals, that the complaint is already made, that druggists are presuming to prescribe in contravention of the rights and privileges of the apothecaries. In twenty years, we shall probably see these same druggists treading in the steps of their predecessors, and exalted by some new legal fiction into acknowledged, if not privileged practitioners. In the ultimate result they, too, may become educated and competent physicians. But in the interim, while the process of transformation is going on, the kingdom is filled with ignorant and unskilful practitioners, and new elements of discord and discussion are introduced into a profession already sufficiently divided.

Let us now suppose, that instead of the immense powers conferred on the college of physicians, by its charter, that body had only received such privileges as are commonly bestowed at the present day on similar corporations, the right to elect its own members, and to regulate their conduct by its by-laws. This we regard as the legitimate, and the only proper means, of combining the influence of individual character and conduct, so as to produce a united effect on public opinion. Had this been the only power of the college of physicians, the first effect must have been to prevent the division between the fellows and licentiates. The fellows would have perceived, that the value of the distinction which they enjoyed as such, could only be maintained by the same professional merit by which it was first acquired; and, consequently, instead of framing their by-laws so as to exclude those whose education and character equally entitle them to the same privileges, they would have taken care so to frame them, that the line of distinction should correspond with that of desert. Had they done otherwise, those who were excluded, no matter by what name they were called, would soon have become the most honourable body.

Another effect of such a limitation of the powers of the college of physicians as we have supposed, would have been to prevent the introduction of the apothecaries into practice as physicians, in 1704. Whatever was the cause of the necessity for additional practitioners of medicine, whether it arose from a deficiency in their number, or the want of a different class, with lower attainments and lower fees, the college of physicians might easily have prevented or removed it, by diminishing the obstacles to obtaining a license. No one can doubt that they would have done this, if instead of relying upon the arbitrary privileges vested in them by the charter, they had felt that their power was derived from the confidence of the public. By this means, the apothecaries would still have been excluded from practising a profession for which they were not educated. At the same time they would have suffered no hardship, because although *as apothecaries* they might not practise physic, yet the individuals among them who were in any good degree qualified, would have been admitted to practise, *as physicians*. The necessity for a greater number, or a different class of practitioners, would have been provided for, without the enormous evil of introducing a great body of unqualified practitioners of medicine; and without the additional evil, which it is more particularly our present object to notice, of entailing perpetual discord and contention upon the profession. That such has been the result of the present institution in England, is sufficiently apparent from what we have already said; and to such an extent have these contentions proceeded, that it is not easy to see how society can much longer endure them, or what remedy can be devised for them.

MERIONETHSHIRE; a small county of North Wales, bounded on the north by Carnarvonshire and Denbighshire, on the east by Denbighshire and Montgomeryshire, on the south by Cardiganshire, and on the west by the Irish channel. Its length is about thirty-six, and its breadth thirty four miles. Its area is estimated at 666 square miles.

This county is a portion of the Alpine district which, commencing in Carnarvonshire, and traversing South Wales, dips under the coal strata, on the borders of the Bristol channel. The surface is rocky and unequal, the valleys afford some fertile fields, and the vicinity of the sea is also found sheltered and productive, but the upper part of the county is sterile and irreclaimable. Many of the mountains of this district, as Arrenig, Moelwyn, Rhinog, &c. exceed 2000 feet in height, and Arran, Mowddwy, the loftiest, is elevated [illegible] feet above sea-level; and Cader Idris reaches [illegible] feet. The scenery of the glens in this county is singularly beautiful, and is enlivened by many romantic cataracts. The principal rivers are the Dee, the Maw, the Dovy, the Glaslyn, and Dwyryd. The agriculture of the county is in a very imperfect state; the principal pursuit of the farmers being that of breeding and rearing cattle. Flocks of sheep and herds of small black cattle are pastured on the hills, and some store cattle sold to the English drovers. The genuine Welch poney is to be found here in all its primitive symmetry, although the breed is nearly extinct in other parts of the principality. The geological structure of the mountainous district consists of grey-wacke, clay slate, and roofing slate, intersected by veins of quartz containing copper pyrites. The vales contain schistose clay, and sometimes peat, constituting bogs and turbaries. The hundreds into which the county is divided are denominated Ardudwy, Eidernion, Estimaner, Penllyn, Tal-y-bont, and Mowddwy; and in these are contained the following towns, Bala and Dolgelly, in which the sessions are held alternately. Corwen, an improving little place, upon the great parliamentary road. Harlech, anciently a borough and the capital of the county; Towyn, Dinasmowddwy, and Aberdyfi. The great staple of this county is slate; these are raised near Festiniog at the quarries of [illegible] Rhiw-briwdû, lord Newborough, and Mr [illegible] works. The slates are conveyed by waggons to the waterside, a distance of seven miles, where lighters receive and convey them to the vessels lying at the port. About 500 persons obtain constant employment in these four quarries. Manufactures of wool are also established in the county, and coarse cloths, kerseymeres, druggets, flannels, and stockings are made in various places. Population of the county in 1821, 34,[illegible]; in [illegible], 35,315.

MERTHYR TYDVIL; a thriving town in Glamorganshire, South Wales, 171 miles from London. Not many years since it was an insignificant little village, but the discovery of iron in the vicinity raised it rapidly to importance. The town stands upon the river Taff, in a country naturally sterile and cheerless; it does not possess any degree of regularity of plan, nor can it boast of any public buildings claiming attention for their architectural graces. Here is, however, a spacious parish church, a chapel of ease, several meeting-houses of Dissenters, and a theatre. The cast and forged iron made in this place amount to many hundred tons weekly. The number of hands employed in each of the principal iron-works exceeds [illegible], and the whole population of the parish may be said to subsist by means of the iron manufacture only. The iron, when wrought into bars, is transported to Pennarth, the port of Cardiff, by the Glamorganshire canal and the adjacent railroad, and then shipped for the English and foreign markets. By the reform act, Merthyr Tydvil obtained the privilege of returning one member to parliament. Population in 1801, 7,705; in 1831, [illegible].

MICROSCOPE. (a.) In the article on this subject already given in the body of the [illegible] pædia, the invention, theory, use, and various character of this instrument, are perspicuously though briefly stated in popular terms, suitable to the nature of the work. At the period of its insertion a new era had lately opened in the history and application of the microscope; much had been done and was still doing to improve the instrument, in the way of enlarging its powers and correcting its eccentricities; and great accessions were daily being made to our knowledge of minute animals and formations. These, however, were not sufficient reasons for departing from the general plan of this Encyclopædia, by giving remarkable prominence to the article *Microscope* at that time,—the more especially as it was already obvious that a supplementary volume would be necessary, wherein this and other subjects might receive the degree of attention which their importance should deserve. It has therefore been reserved for the present time, to give a more full and satisfactory detail of the improvements effected on the instrument, (chiefly by the labours of Wollaston, Brewster, Herschel, Pritchard, Goring, Coddington, Cary, &c.,) and of the interesting phenomena which, in consequence of these improvements, have been laid open to our view.

Avoiding as much as possible a repetition of the former article, and an iteration of the particulars comprehended under the heads *Optics*, *Lens*, &c., it is still desirable to bring the first principles of the microscope into close connection with all their subsequent adaptations and combinations, and this we shall do in as few words as possible.

An object is rendered visible by the light reflected from its surface, and the eye perceives it by cones of rays issuing from every point thereof,—the apex of those cones being the points whence they are emitted, and their common base the pupil of the eye. Now, though the eye can to a certain extent contract or dilate the pupil, and otherwise adapt itself to the rays falling upon its surface, it is still found from experience that no rays will be converged on the retina, (see *Retina*) and consequently no distinct image of the point whence they proceed be impressed upon it, unless those rays approach very nearly to parallelism. It must therefore be obvious that there is a certain distance at which an object should be placed from the eye, in order to be seen distinctly, or, in other words, that the sides of the radiant cones may approach very nearly to parallel lines. This requisite distance for distinct vision varies considerably in different persons; some who are exceedingly short-sighted, that is, who have an undue convexity of the eye, require the object to be brought within two inches of the visual organ, whilst others whose eyes have less convexity than is usual, can see most conveniently at the distance of ten inches, or perhaps more. Now, bearing in mind that an object cannot be brought nearer to any eye than a certain point, without creating confusion and indistinctness in the image conveyed to the retina, and also considering that to magnify an object, is only in other words to bring it *within* that distance, it becomes evident that if we obtain means for procuring distinct vision any point nearer to the eye than the natural focus, we at once enlarge the images of objects in the inverse ratio of the two distances. To estimate in a popular manner the magnifying powers of microscopes, it has always been necessary to assume some standard distance for distinct unaided vision; though, from the circumstance of scarcely any two individuals having precisely the same focus of natural sight, the calculations referred to such standard are less satisfactory than could be wished. The early micrographers adopted six or eight inches as a fair average, and, in the present day, Sir D. Brewster limits distinct vision to five inches, whilst Mr Pritchard extends it to ten inches. Of all these standards, that of eight inches approaches most nearly to the general focus of the human eye; but none of them is free from a multitude of exceptions. Perhaps Mr Pritchard's standard of ten inches is the best, as it offers all the conveniences of decimal rotation; but in fixing such a focus for the natural eye, it should be premised that, without reference to the actual focus of any eye, the object is to be viewed by it at the distance of ten inches, in order that the ratio on which the magnifying power of the microscope is calculated, may universally hold good. Persons who from short-sightedness *cannot* see an object at ten inches, must determine the magnifying power expressly for themselves. Dr Goring, indeed, advises that the expression of the magnifying power should be discarded altogether, and that we should simply state the focal distance of the magnifier, leaving to every person to determine the correct ratio between it and the focus of his own eye.

The first rudiments of a microscope, and the first efforts at microscopical observation, are to be found in the nursery. A child perforates a card with a pin, and looking upon his book through the small aperture, at a distance of two or three inches, he sees the letters greatly magnified. In this case the aperture becomes the base of the radiant cone, in place of the pupil of the eye, and though the quantity of light is considerably diminished, the parallelism of the two sides of the cone produces distinct vision. This is of course only mentioned in explanation of a principle; for a small vacant aperture merely producing a limited effect by diminishing the light, can answer no useful practical purpose. It is to Refraction, (*qu. vide*) or the bending of the rays of light by the intervention of some transparent medium between the eye and the object,—or to Reflection (*qu. vide*) by means of concave specula, (see *Speculum*) that we must look for a satisfactory magnifying power.

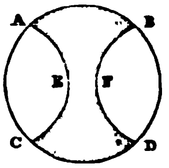
It is found that a circular piece of glass, one or both of whose surfaces are convex, (see *Lens*) refracts or bends the rays of light towards the centre of its convexity; and that if an object be placed in its focus, (which may be determined practically by observing at what distance it will concentrate the solar rays,) the sides of the cones of rays proceeding from all the points in that object are rendered parallel after transmission; consequently an eye on the other side of the lens will perceive the object distinctly at its focal distance, whatever that may be, and will see it magnified in the ratio of the focus of the lens to the natural focus of the eye. Regarded as magnifying powers, concave specula and convex lenses are the counterpart of each other; the reflection of the one producing the same effect in the enlargement of the object, as the refraction of the other.

Microscopes are either *single*, or *double* (or *compound*;) the former consist of a single lens or speculum, the latter of a combination of lenses, or of lenses and specula. They are likewise distinguished into *refracting*, *reflecting*, and *refracting-reflecting* microscopes; in the first case they are formed of lenses, in the second of specula, and in the third of both lenses and specula. We refer the reader to our former article for sufficient notices of these various constructions, as it is not intended in this place to enter into extended descriptions of instruments that have been long in use, and which are consequently well known; our present purpose is to speak of those improvements in the elements of the microscope that have opened up visions of wonder in the world of atoms. See *Catoptrics*, *Dioptrics*, former article *Microscope*, *Optics*, &c.

From the observation of Seneca, (see former article) we find that the ancients had some notion of microscopic power, and that globes of water of different diameters were the magnifiers in use amongst them. Since the sphere therefore seems to connect itself with the origin of the microscope, it may be an orderly inquiry to trace the varieties of the spherical figure that came successively into use, and to state the ingenious expedients by which recent philosophers and men of science have succeeded in improving its performance as a magnifying power.

SPHERES.—The discoveries made by the ancients with *their* spheres were few and unimportant, and indeed they could not well have been otherwise; for in addition to the disadvantages resulting from the low refractive power of water, we presume they had no certain means of producing a truly spherical figure, and consequently they would be greatly perplexed by the eccentric refractions of their magnifiers, and the illusive distortions thence resulting. The glass spherule, or minute sphere, obtained considerable reputation in the infancy of the microscope, and indeed maintained it for some time, in consequence of its high magnifying power, and the facility with which it could be formed to almost any degree of minuteness; and as the focal distance of any glass sphere or spherule is distant from its surface, only the one-fourth of its diameter, a spherule of exceedingly small radius naturally appeared to offer the means of enlarging the angle of vision to its greatest possible extent, or, in other words, of reducing the *seeing* distance between the eye and an object almost to a physical point. It was soon however discovered that these deep magnifiers were imperfect in performance, owing to the small quantity of light they transmitted to the eye, and the contracted field of view consequent on their limited aperture, and more especially on the very unequal refraction of the oblique rays produced by their spherical figure. They maintained their repute notwithstanding, for by their assistance the philosophers of the age were enabled to look into the hidden things of which philosophy had never dreamed; and men were content to strain their optic nerves and tolerate other inconveniences, in return for the advances they were daily enabled to make into a world of knowledge hitherto untracked. When the novelty of these new and interesting observations had in some measure passed, the spherule gradually fell into disuse; and magnifiers of less power, but admitting more light, and presenting a larger field of view, were substituted in its place. It is not however to be understood that the spherule has ever been entirely laid aside; for even at the period when no other method had been suggested for making it than that of melting a thread of glass in the flame of a candle, and when there was consequently to be added to its other inconveniences the formidable one of imperfect sphericity, many persons strongly attached to deep powers, and disposed to consider amplification of the image as the highest achievement of the microscope, held an opinion that a good instrument could dispense with its assistance. Afterwards, when opticians had succeeded in grinding minute spheres of perfectly true figure, they came once more into somewhat general use; for in despite of all their disadvantages, they did show a physical point of an object distinctly and highly magnified, and this was enough for the mass of observers. Indeed, even in the present day, these spherules are included in the catalogues of our opticians, and are offered to the curious observer of so deep a focus as one 300th of an inch. All we need say of them is, that they are the very worst class of magnifiers in use at this time. We now come to speak of the recent ingenious contrivances for rendering the sphere a satisfactory magnifying power.

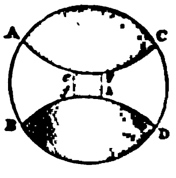
The Grooved Sphere.—Sir David Brewster, it would appear, originated this device, and this being the case, we are at a loss to conceive why a slight modification of it should have obtained the name of the *Coddington Lens;* for the latter appears to differ from the grooved sphere only in its being made more minute, and having the central thickness diminished. The grooved sphere is nothing more than a sphere with a concave groove or hollow, more or less deep, cut round it. The end obtained is a larger available field of view, and an image more clearly defined, in consequence of the extremely divergent rays being cut off and prevented from entering the eye.



A B C D is a sphere having the parts A E C, B F D cut away entirely round it; the extremely divergent rays falling upon the surface A B, or C D, would consequently not reach the eye; and by diminishing the central thickness E F, the pencils of rays would be confined so closely within the vicinity of the axis of the sphere, as to reduce the spherical and chromatic aberrations to nothing, in a practical view.

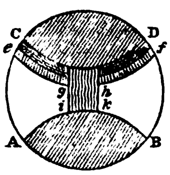
We have a grooved sphere of one-tenth of an inch focus, made by Mr Cary of the Strand, which defines the object beautifully; for an illustration of its penetrating power we refer to [illegible] 90, representing all the interesting details in the tongue or trunk of a fly.

The Periscopic Sphere.—This is another contrivance by Sir D. Brewster, though he appears to have been led towards it by the [illegible] of Dr Wollaston. However this be, he has greatly improved upon the original hint, and produced a sphere which obviates all the inconveniences arising from diminution of light by duplication of surfaces, and the confusion resulting from spherical aberration. From the several methods of construction we select the one exhibited in our diagram.



A *e g* C, B *f h* D, are two perfectly similar double convex lenses, united by a tube *e f g h*, in such a manner that their axes A C, B D may coincide with the axis of the sphere A B C D, which indeed they form. The tube *e f g h*, [illegible] the centres of the lenses, is to be filled with a fluid, having the same refractive power as the have. The advantages of this construction may be regarded as similar to those of the grooved sphere.

The Periscopic Achromatic Sphere.—This is a third suggestion by Sir D. Brewster for the construction of a microscopic sphere. Referring to the diagram; A B and C D are two double convex lenses, having their outer surfaces portions of the same sphere; they are united at the centre, as in the case of the periscopic sphere, but the fluid occupying the space *g h i k*, instead of being of equal refractive power with the lenses, is to be adapted for the correction of chromatic aberration. A convex speculum *e g h f* is cemented on the lens C D for illuminating the object; and the aperture *g h* cuts off the oblique rays that would otherwise confuse the image and contract the available field of view. We presume this sphere must be very perfect in its definition, as it combines the advantages of the grooved sphere, with an entire correction of the chromatic aberration. The magnifying power is that of a sphere, diminished by a double concave lens, equal to *e f* A B.



Lenses.—The various figures and refractive properties of lenses are fully explained and illustrated under *Optics* (*qu. vide*). The inconveniences attending the use of the small spherule, led to the re-adoption of the double convex lens as a more satisfactory magnifying power; for it was perceived hat what it lost in the amplification of the image, was more than compensated for by the increase of ght, and the much greater extent of the field of iew. The performance of double convex lenses f deep power, though more perfect than that of he spherule, was however less satisfactory than ould be wished, the spherical and chromatic aberrations being very considerable. The plane convex ns was then introduced into the microscope; but this magnifies only half so much as a double nvex lens of equal convexity, it necessarily rmed, when adopted as a deep magnifier, a portion of a very minute sphere. The exposure of plane surface to the object, corrected in a considerable degree the unequal refraction of the lique rays, and gave breadth to the field; but om the extremely small size of the lens, the light s too feeble to render its use pleasant. In these ervations we shall be understood to refer to the operties of the convex lens *per se;* for it is rcely necessary to remark, that in the compound struments successively invented, the imperfect tion of the uncombined lens was to a certain tent overcome. We now come to the consideration of the recent improvements in these simple gnifiers.

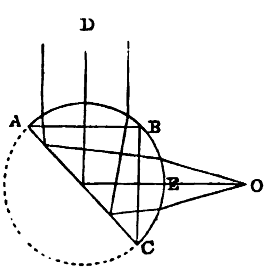
The superiority of the best convex lenses now use, over those to which we have adverted, results partly from the ratio of their curved surfaces, d principally from the qualities of the diaphanous substances employed in their formation. ss has a very low refractive power; and this cumstance rendered it desirable that some more itable transparent medium should if possible be und. The attention of the scientific world was t called to this subject by Sir D. Brewster, who t only clearly defined the desiderata in microscopic elements, but experimented most successfully th gems, and thus led the way to all the improvements in the lens, resulting from the quality of its substance.

The Diamond Lens.—Attention having been awakened to the highly refractive powers of gems, and their consequent fitness for magnifiers, Dr Goring and Mr Pritchard were led to experiment on the diamond; and after a course of persevering and ingenious trials, the latter gentleman succeeded in bringing this precious substance to the spherical figure, and rendering its action satisfactory. Now to appreciate duly the value of a diamond lens, we must bear in mind that the thinner a lens is, or, in other words, the slighter the convexity of its sides may be, the more perfect will be its action as a magnifying power. For if a lens be too thick many rays are dissipated in their passage, and the divergent ones are refracted very unequally; and when the lens is a portion of a small sphere, it is found that diminution of aperture, and consequent loss of light, are a resulting inconvenience. Now a diamond lens, the radius of whose convexity is 8, has equal refractive power with a glass lens curved to a radius of 3; hence, we can either obtain much deeper magnifiers with the diamond, or gain vast advantages from the diminution of central thickness, and the greater radius of the lens. It is only necessary to add that a sphere or spherule of diamond would be totally useless; the highly refractive power causing the focus to fall beneath the surface.

The Sapphire Lens.—The sapphire has a much lower refractive power than the diamond, its radius of convexity being to that of glass for the same magnifying power, as 5 is to 3. A lens of this substance is injured also, more or less, by double refraction, which duplicates and confuses the details of an image. Methods are in use for counteracting this inconvenience to a certain extent; but it would appear that the sapphire is better calculated to give the benefits of large aperture and increased light, than the advantages of a deep magnifying power.

The Garnet Lens.—The colour of this gem would on first consideration appear to render it an unsuitable substance for lenses; yet no great inconvenience is found to result from it, as the tinge is exceedingly slight when the lens is of moderate thickness. The index of refraction in the sapphire and garnet is the same; the latter is however free from the disadvantages of double refraction, and experience decides that it is altogether the most pleasant and useful medium of which lenses can be formed, of course excepting the diamond, whose costliness renders it comparatively inaccessible.

The Cata-dioptric Lens.—This is a contrivance by Sir D. Brewster for obtaining from a hemispherical plano-convex lens a double power, through the joint agency of refraction and reflection.



A B C is a hemispherical plano-convex lens. From an inspection of the diagram, it will be evident that a pencil of rays proceeding from any point in an object at O, will be refracted at the surface B E C, reflected from the plane surface A C in correspondent angles, and, after suffering another refraction at the surface A B, proceed parallel. Consequently an eye at D will see the object magnified twice as much as it would have been by the lens, A B C used in the ordinary manner; since the object is in fact magnified by the two equal plano-convex lenses B E C, A D B, whose focal distance, when acting together, is the *radius* of the sphere of which they, in common with A B C, are parts.

Fluid Lenses.—By a fluid lens is to be understood a small drop of water, or other fluid, suspended in a small aperture in a plate of brass or silver. It will be obvious that a lens of this nature takes an irregular form, the upper surface being somewhat flatted, and the lower one having an elongated sphericity. The construction of this description of lenses is far from being perfect; and we make mention of them in this place only for the purpose of alluding to the scientific efforts of Sir D. Brewster in this department, which may be expected to issue in the formation of fluid lenses possessing the same advantages with those constructed from gems, and having even less eccentricity of action than they have.

COMPOUND MAGNIFIERS.—It remains only, in this department of our subject, that we give a popular description of the compound magnifiers at present in use, named *Doublets and Triplets*, and we shall confine ourselves to a single example of each.

Wollaston's Doublet.—The objects contemplated in this contrivance are deep power, unusual extent of field, and a diminution of chromatic and spherical aberration. This doublet, as first constructed by Dr Wollaston, consists of two plano convex lenses, the focus of the one being to that of the other, as 3 to 1. The lens of shortest focal length is fixed with its plane surface towards the object, and the other lens is placed over it at a certain distance, with the convex side towards the eye. Mr Pritchard has corrected some apparent errors regarding the nature and construction of this magnifier, and Sir D. Brewster has experimented upon it with his usual talent. The action of the Wollaston Doublet when brought to bear, by a delicate adjustment, on minute transparent objects, is most admirable, and its defining power is worthy of all praise.

Pritchard's Triplet.—This is a construction modelled on the plan of the Doublet, and dependent on the same principles. As the name implies, it consists of three lenses, the third (the one nearest to the eye) having a greater focal length than the other two. When properly centred and adjusted, this combination acts very powerfully in defining and penetrating the details of that difficult class of objects named the *Tests*. It will of course be understood that the gems frequently enter into the composition of doublets and triplets, when, if the selection be judicious, their performance is exceedingly powerful and accurate. We merely add, that the magnifiers just described can be used to advantage only with microscopes of very perfect adjustment; nothing satisfactory can be shown by them unless the focus be most accurately obtained.

THE MANAGEMENT OF LIGHT AND ILLUMINATION.—The improved microscopic elements to which we have briefly alluded, depend for their proper and satisfactory performance on a judicious condensation and adaptation of light. We shall not discuss the subject of monochromatic illumination, as it is a refinement in science of small regard in a popular essay, and is as well little more at present than a suggestion by Sir D. Brewster which may issue in some useful practical results. Neither shall we stay to consider the effects produced by polarising the light admitted to the microscope, as this [illegible] is one of the minutiæ in microscopic observation that scarcely comports with the popular use of the instrument. It is sufficient for our purpose to remark upon the reflectors and condensing lenses ordinarily employed in the supply and management of the light. Compound microscopes of the common construction are frequently provided with no other means for adapting the light than a concave speculum; but as these instruments are usually contrived so as to combine the principles of both a simple and compound microscope, this reflector is insufficient to produce the desired effect; for when used with a single lens, it converges the rays of light too much to admit of their filling the field of view, and it produces also an unpleasant glare in the centre, that disturbs and confuses the image. When the compound body is screwed into the object lens, the concave reflector answers well, as its convergence of the rays causes a more intense light to pass through the diaphragm, or small aperture, of the tube, which consequently can better afford the attenuation which takes place in the expanded compound field, than the light which is thrown up by a plane reflector. These microscopes ought, therefore, to be furnished with two reflectors, one plane and the other concave; otherwise their adaptation for simple and compound powers is imperfect. A plane reflector alone, will answer the purpose, if a condensing lens be fitted to the pillar of the instrument so that it may intercept the rays when required, and be made to slide up or down to converge them more or less according to circumstances. The condensing lens will serve another important purpose; for by a simple contrivance it can be made to concentrate a strong light upon opaque objects, without which they could not be distinctly seen. It is to be remarked that good day-light answers best for opaque objects under a moderate power of the simple microscope, but when it is wished to examine them with deeper magnifiers, an artificial light strongly condensed is required. For transparent objects, natural light is, speaking generally, not well adapted; they come up with a better definition and altogether more satisfactorily when the concentrated light of a lamp or candle is transmitted through them. We have ourselves seldom used the compound [illegible] with natural light for any object or [illegible] power; and we believe few observations are [illegible] made to advantage with it; as the strongest daylight will scarcely afford sufficient light for the field even when the object is transparent, and for opaque objects it is, under the lowest compound power, by far too weak. These general [illegible] tions apply to the ordinary instruments in use amongst the many, and will not hold [illegible] with reference to those expensive and [illegible] constructions and adjustments which are [illegible] by the eminent opticians of the present day, [illegible] few who can afford to purchase them.

The advantage of using good day-light, [illegible] practicable arises from the fact, that the chromatic aberration of lenses is less perceptible by it than by artificial light. By day-light, however, is not to be understood the direct light of the sun, which, except in the case of the solar microscope, is the *very worst* illumination that can be employed; for it causes such a mist and confusing glare in the field, that no object, transparent or opaque, can be *seen by it* with due distinctness. It is necessary also to point out the kind of artificial light which is most suitable for microscopic purposes; for observation is frequently defeated and much illusion produced by a bad illumination. The light of a tallow candle, even of a moulded one, is very objectionable; the flame is almost continually in agitation, and the flickerings cause an unpleasant motion in the field, that destroys all the definition of the microscope, however perfect it may be. An argand lamp has been much recommended for its steady and intense light; and if the observer be provided with an instrument having all the necessary apparatus of stops, lenses, and mirrors for its management, it is perhaps the most efficient light of an ordinary nature that can be obtained. We have ourselves seldom used any other light than that of a wax candle, which, if it be not disturbed by a current of air, gives an uniformly steady flame, and produces a fine motionless illuminated field, well adapted for transparent objects. This light, it is true, is not so intense as that of the argand lamp; but we find this an advantage rather than otherwise, so long as we have at hand the necessary means for condensing and directing it.

The quantity of light admitted or transmitted must be regulated by the aperture of the lens and the nature of the object under observation, since too much light is as objectionable as too little. Simple lenses of low power applied either to opaque or transparent objects, do not require a strong light; for they admit a much larger pencil f rays than the deepest magnifiers, and, by consequence, if used with too intense an illumination, hey both injure the eye and exhibit the object nder a perplexing brilliancy. As the powers increase in depth, the light must increase in intensity; for in ordinary magnifiers the aperture through hich the rays are to pass, continually contracts as e ascend to the most powerful amplifiers; and it ust be evident that a limited aperture requires a ncentration of light that will compensate for the nallness of the pencil admitted through it. A mond lens will not need so much light as a glass e of the same magnifying power, and for this vious reason,—the diamond presents a larger rface and takes in a much greater number of rays. he same remark applies in a less degree to the her jewel lenses. Doublets and Triplets are pressly directed to the examination of the nutest and most delicate objects that can be submitted to the microscope; and consequently the e management of the light with reference to m is most important, as the slightest deficiency excess of illumination is sufficient to perplex the rver. We are not able to give definite instructions on this point, as every observation requires a uliar adaptation and adjustment; as a general e we advise that in every case the effect of both ique and direct rays of different intensity be ed. Indeed no directions can be given on the nagement of light and illumination that will not uire to be modified according to circumstances.

To say no more, the variety of the human eye in different individuals would nullify any definite rule that could be laid down. The observer must acquire by practice, and from such general observations as we have offered, the necessary skill and discretion.

MAGNIFYING POWERS.—It is desirable that the microscopic cabinet should be provided with a judicious selection of magnifying powers, and the series should have considerable range; since the objects which nature offers for examination are numerous and almost infinitely varied, and each class requires a peculiar amplifying power for its development. An object may be submitted to too high a power, and exhibit nothing to awaken interest or excite attention; but on applying a lower amplifier, a formation is discovered that charms us by its beauty or astonishes by its wondrous arrangement. We look at another object slightly magnified, and it remains an unmeaning atom; yet no sooner do we deepen the power, than obscurity is dispelled, and new information dawns upon us; the small material particle whose presence the unassisted eye could not detect, exhibits a manifestation of creative power, in the contemplation of which all the faculties of the mind are absorbed. Mr Pritchard distinguishes, and with his usual acumen, between the *penetrating* and the *defining* power of magnifiers; the first of these he refers to aperture, or, in other words, to the quantity of rays gathered up, and the latter to amplifiers, whose chromatic and spherical aberrations are under due correction. The penetrating power is necessary to develope the structure of the scales on the wings of butterflies, &c., and the defining power is required for such objects as the hair of a mouse.

The following is a table of progressive magnifiers, whose foci range from one inch to one-thirtieth of an inch, and opposite each lens is placed its focus, and the magnifying power on the line, surface, and cube, assuming distinct unaided vision to be effected at ten inches. These are the amplifiers we have used in our own observations, and by which our illustrative drawings were constructed. We venture to recommend them as a perfectly satisfactory series for general purposes.

	F	L	S	C	
1st Magnifier	1 In.	10	100	1000	These may be used with a compound body.
2nd -	½	20	400	8000	
3rd -	¼	40	1600	64000	
4th -	⅛	80	6400	512,000	
5th	$\frac{1}{10}$	100	10,000	1,000,000	
Coddington Lens	$\frac{1}{10}$	33+	1089+	35,937+	Increase of penetrating and defining power.
Wollast. Doub.	$\frac{1}{20}$	200	40,000	8,000,000	
Ditto	$\frac{1}{30}$	300	90,000	27,000,000	

It is to be observed with respect to the foci of double convex lenses that they always measure from the centre of the medium and not from the apex of the surface exposed to the object; for the magnifying power that is calculated from a focal distance between the object and proximate surface will in some cases be widely wrong, as may be seen in the preceding table, where the Coddington lens of one-tenth inch focus is found to have only one-third the power of an ordinary double convex lens of similar focus. The thickness of double convex lenses does not usually bear any considerable proportion to their focal distances; and hence it produces no important error in a practical view, to take the distance between the object and proximate surface as the true focus. In the case of a spherule, sphere, or hemisphere, however, it is obvious that the thickness of the medium is of importance and requires to be reckoned in the focal length. The foci of ordinary thin lenses are reckoned thus; that of a plano-convex at the distance of a diameter, and that of an equal and double convex at the distance of a radius, of the sphere of which their respective surfaces are portions. The focus of a sphere is at half the radius, but to this must be added a whole radius, when we wish to ascertain a ratio between its amplifying power and that of the human eye. Hence it will be seen that a double and equally convex lens has a greater magnifying power than the sphere of which its surfaces are portions. As, however, we can produce spheres of much smaller radius than any double convex lens, it is a great advantage to have the means of correcting their performance as magnifying powers. Hemispheres have two foci: if the convex side be towards the object, the focus is at a radius and a third from the refracting surface; but if the plane side be exposed to the object, the focus is then at the distance of two radii; and hence it is discovered that in either case the hemisphere has more than half the magnifying power of the sphere, and that the exposure of the plane surface gives the least power of the two. The same rule holds proportionally with regard to the plane and convex sides of any plano-convex lens. It may be asked, if the exposure of the convex surface gives a greater power, why does the optician always place the plane side towards the object? Simply, to correct in a good degree the spherical aberration, and to effect the transmission of a larger pencil of light,—two important points, which more than compensate for the reduction of power. From what we have observed concerning the foci of common lenses, it will be obvious that there is a peculiarity about those of the doublet and triplet magnifiers. The focus of a doublet measures from between the two lenses, consequently if the focal length be one-twentieth of an inch, the anterior lens must be brought considerably within that distance of the object; and here we discover an objection to the deep triplet, which, from being composed of three lenses, gives a very short focal distance between the anterior surface and the object, and comes down inconveniently close upon the slide. The doublet appears, for the reason above stated, to be better adapted for extreme depth of power than the triplet, which in addition to its inconvenient focus loses much of the light by reflection from the number of surfaces. Mr Cary informs us, "that he has always found a good doublet fully equal in defining power to any triplet."

It will not be out of place to remark briefly on the present rage for deep magnifying powers. The minute atoms which are now subjected to microscopic examination, and the vast *real* improvements and advances in the elements of the instrument, seem to have suggested an idea that the amplifying power of the microscope may be carried to almost any extent with proportionately increased advantages to the observer. The fact is, however, that with all the benefits resulting from improved construction, and the adoption of media of higher refractive powers, we have still to guard against the error of limited aperture and loss of light. There appears to be little advantage, so long as glass is the refractive medium employed, in using single lenses of less than one-twentieth inch focus, or doublets of deeper power than one-thirtieth inch focus. Any thing which they fail to discover will, we believe, be very uncertainly shown by deeper amplifiers of the same medium. Indeed, as an evidence that microscopic discovery does not depend altogether on depth of power, we may mention that we have a double convex lens of one-tenth inch focus, and one-twentieth inch aperture, that shows the markings on the larger scales of the podura with great distinctness, and this object has been, and still is, considered a very severe test of defining and penetrating power. When jewels are employed as the refracting media, of course the amplifying power may be advantageously increased in proportion to their refractive properties. It is however a question whether we should not take the great advantages of large aperture and additional light which they offer, rather than push the amplifying power to its extreme point.

Some difference of opinion still exists respecting the proper mode of expressing the magnifying power. The micrographers of the present day for the most part seem to incline towards the linear measure; but there are some who prefer expressing the power by the magnified surface, and other few who contend for the whole cube. Now it is obvious, that for a mere comparison between different magnifiers it is quite sufficient to state the diametric enlargement, as that gives the simple ratio of their powers; but we conceive the linear measure is not at all satisfactory when we would compare surfaces, unless we mentally, or otherwise, calculate the square, in which case we might as well express the magnifying power at once by the superficial enlargement; and again, the square will fail to give us just ideas of the relative bulk of any two bodies, as this can only be ascertained from the cubic content of each. We are aware that an attempt on our part to revive the practice of computing by the cube would raise a laugh against us; yet, whilst we admit that to say of a one-thirtieth inch doublet, it magnifies twenty-seven million times, would savour of charlatanism, we must still remind observers that such a doublet really shows a minute object so highly magnified, that twenty-seven millions of such objects condensed into one would expose a visible surface to the naked eye of no greater extent than that presented by the magnified object. With respect to the magnified surface, we are of the number of those who contend for it as the true measure of the magnifying power; the eye computes by surfaces not lines, and it is most absurd to say that we exaggerate the performance of microscopes by using any other than the linear measure. The preceding table, however, exhibits the powers on the line, surface and cube, and our readers can adopt the measure most satisfactory to themselves.

MICROMETER. Our former article under this head refers only to the micrometrical adjustments of telescopes; but it will be obvious that a modification of the same principle of construction applies equally well to the microscope. The name of the instrument sufficiently explains its use, viz., to take exceedingly small measurements, with great delicacy and exactness. In the case of the microscope, the micrometer is designed to measure the actual dimensions of those minute objects that are either barely perceptible by unaided vision, or which, from their smallness, are altogether concealed from the unassisted eye. It would unnecessarily extend the present article, to enter into detailed explanations of the various contrivances that are in use for this purpose; we may simply state, that the [illegible] either of cross-wires moved by an extremely delicate adjustment; of minute bodies whose dimensions have been ascertained, such as the globules of the blood, certain small seeds, &c.; or of minute parallel lines drawn at regular distances, on slips of glass, *with the* point of a diamond. Now, it is obvious, that if with any power of the microscope, we bring one of these measures under observation, in connection with a minute object whose dimensions are sought, we can establish a comparison more or less correct that will solve the inquiry. Sir David *Brewster* remarks, that "a good micrometer for single microscopes is still, however, a desideratum;" he also observes that "an excellent method of *measuring* microscopic objects, is to project the image of the object against a divided scale, at a given distance from the eye." Now, this method *is precisely* the one adopted by Dr Hooke; and as it is the most simple, and for ordinary purposes the most satisfactory means that can be employed, we *shall* briefly describe and illustrate its application. Any plain scale that is accurately divided will answer the purpose; and it is only necessary *to lay it on the* table at the foot of the microscope, which should be at such height, that the eye, when making observation, may be just ten inches from *the scale*. Now, whilst looking with one eye into the microscope, observe with the other the divisions on the scale, and refer the magnified object to those *divisions*, by which means a diametric measurement of the enlarged image is readily obtained. A person who has never used this method will scarcely believe with what readiness and accuracy, after a few trials, the measure may be determined. Then to ascertain the actual dimensions of the object, nothing more is required than the magnifying power employed. For instance: we observe that a certain object seen through the microscope measures five-tenths of an inch on the scale, and the magnifying power is 200 linear; divide five-tenths therefore by 200, and you obtain one four-hundredth part of an inch, as the actual diameter of the object. The magnifying power itself may of course be readily determined by bringing an object under review whose dimensions are known, and projecting its magnified image on the scale. Thus, if an object one-tenth of an inch in length be projected over two inches of the scale, the microscope has a linear power of twenty. Those who desire fuller information respecting the recent improvements in the microscope and its appendages, should consult *Goring's Microscopic Cabinet*, *Goring* and *Pritchard's Micrographia*, and *Brewster's Treatise on the Microscope*.

THE PREPARATION AND EXAMINATION OF OBJECTS.—A satisfactory development of the nature and structure of microscopic objects, depends altogether on a judicious preparation of the objects themselves, and *the application* of suitable light and magnifying power. As much disappointment is sometimes felt by persons who pursue their observations without due *consideration* of these important points, it may not be amiss to lay down a few general rules with reference to them. All objects are either opaque or transparent; and are to be viewed either by rays reflected from their surfaces or by light transmitted through them. Now, as it is inconvenient with any t *low* powers, and altogether impracticable with very deep ones, to condense a sufficiency of light to the surface of an object, to render observation pleasant and satisfactory, it is generally recommended to reduce opaque objects to transparency, by cutting them into very thin sections. There is a variety of objects, however, that cannot be treated in this way without destroying them, and which must consequently be viewed by reflected light; add to this, that the structure of few transparent objects can be thoroughly ascertained until they are observed both by transmitted and reflected light.

When an object is selected for examination, we must first consider in what way it *can* be treated. If it be opaque, and of such a nature that a thin section cannot be obtained, or if obtained, would give no correct idea of the general structure, it is best to illuminate it with reflected light, and view it under a low power; afterwards detached portions can be observed with a higher magnifier, and the examination of these may perhaps be pursued farther by a judicious subdivision that shall render them sufficiently transparent to admit of light being transmitted, and much deeper magnifiers applied. If the object be naturally transparent, it is advisable in the first place to view it as if opaque, which is easily done by laying it on a stage of opposite colour to its own, and condensing a strong light upon the surface. The observer thus obtains a knowledge of the superficial structure; and may then proceed in his examination by transmitted light, gradually increasing the magnifying power. The surfaces of opaque objects, and the degree of transparency in diaphanous ones, vary very considerably; and hence the supply of light must be limited or increased accordingly. Some opaque objects have such an absorbing surface, that the strongest light is barely sufficient to answer our purpose; others present all the variety of colours, each requiring a peculiar modification of the light; a third class have surfaces so highly burnished that a strong illumination dazzles and perplexes the eye; a fourth class exhibit such a confusion of prismatic reflections, that the light requires not only to be duly modified, but also to be cast upon them at a proper angle, otherwise, we see a gorgeous nothing. And with respect to transparent objects, some are slightly inclined to opacity, and require a very powerful transmitted light to develope them; others are so exceedingly transparent that it is impossible to examine them, except with a faint illumination; and an almost infinite variety lies between these two extremes, every individual difference requiring a modification of light peculiar to itself, and which can be ascertained only by trial.

In the examination of objects, there are two very important points to be attended to with reference to the magnifying powers employed: First, to make the observation with no deeper power than is absolutely necessary to develope the structure satisfactorily; and, secondly, to determine whether it is penetrating or defining power that is needed. The opticians of a century past fell into a great error in the construction of the microscope; they considered that the merits of the instrument lay in a vast enlargement of the field, and a very deep objective power: the consequence was, that they produced enormous images totally destitute of definition, and exhibited under an attenuated light barely sufficient to make darkness visible. Micrographers, taking their cue from the opticians, (or the opticians from them, we know not which) delighted in the use of deep powers; and so long as they could magnify the object to wonderful extent, they appear to have had small concern about the mistiness and indecision that interfered with their observations. No person who is conversant with the microscope, needs to be told that there are objects on which, if he continue deepening the power, they dissolve as it were into nothing. Take the scale of an eel for instance, which comes up sharp and well defined under a linear power of 40, but exhibits nothing that the eye can properly distinguish under a linear power of 200 or 300. There is then a bound beyond which the amplifying power cannot properly extend. Again, as regards penetrating and defining power; some objects that require deep power, need also considerable aperture to penetrate into their arcana: in other words, they require a nice adjustment of magnifying power with sufficiency of light. Other objects depend less on the penetrating than the defining power to develope them. To these latter points we have before alluded.

Considerable ingenuity is exercised at the present day in preparing objects for examination. The opaque are mounted on slips of glass or ivory, with a ground of opposing colour underneath them. If the object, for instance, be yellow, the ground on which it is placed must be green, and a similar contrast is to be uniformly observed, in order that the object, whatever be its colour, may be isolated and presented in full relief to the eye. Transparent objects are laid on slips of glass, and covered with a thin film of mica, which, whilst it keeps them flat, and preserves them from dust, does not prevent the application of very deep powers when necessary. Some objects inclining to opacity, are rendered beautifully transparent by being immersed in Canada balsam, and afterwards placed between two slips of glass, which are to be pressed close together to expell any small air bubbles in the balsam. Many strictly transparent subjects are exhibited to greater advantage when prepared in balsam; and it is to be noticed of this class of objects generally, that they show better when immersed in fluid, either oil, spirit, or water: for the eccentric refraction of the magnifier is considerably corrected by the refraction of those media. The examination of infusorial animalcules is best effected by placing a small drop of the fluid containing them on a slip of glass, and laying a thin plate of mica over it; by this means the fluid is brought to a perfect level, and lies uniformly in the same focus: add to this, the fluid does not so rapidly evaporate as when its surface is exposed. Living objects, and those specially selected to exhibit the circulation of the blood, require a simple apparatus, (usually provided in the microscopic cabinet,) for bringing them properly under observation. Of course a vast multitude of objects present themselves for examination, for the preparation of which no definite rules can be laid down; the observer must necessarily experiment and use his judgment. In this department of our subject, we refer the inquiring reader to *Pritchard's Natural History of Animalcules*, *Goring's Microscopic Cabinet*, *Pritchard's Microscopic Illustrations*, New Edition; and *Pritchard's List of 2000 Microscopic Objects*.

MICROSCOPIC DISCOVERIES.—A detailed history of microscopic discoveries would occupy more space than our present limits afford, otherwise it would be an interesting task, to trace the progression of human knowledge into the arcana of nature, from the first application of the microscope to the present day. It will answer our purpose, with reference to the past, to advert to the labours of Hooke and Leeuwenhoeck, who may be considered the founders of microscopic science. The latter micrographer used only single microscopes in all his researches; and this circumstance may account for the wonderful truth of his observations, for a simple magnifier shows an object with much greater certainty, so far as its power extends, than the best compound instruments that have ever been invented. A singular error is still perpetuated by many writers, who, when alluding to the microscopes of Leeuwenhoeck, describe them as being spherules only. This misconception was exposed by Baker nearly an hundred years ago, in these words:—"Several writers," says he, "represent the glasses Mr Leeuwenhoeck made use of in his microscopes, to be little globules or spheres of glass, which mistake most probably arises from their undertaking to describe what they had never seen; for at the time I am writing this, the cabinet of microscopes left by that famous man, at his death, to the Royal Society, as a legacy, is standing upon my table; and I can assure the world that every one of the twenty-six microscopes contained therein is a double convex lens, and not a sphere or globule." The instrument used by Hooke was a very inefficient compound microscope, constructed on the erroneous principle of enlarging the field beyond all reasonable bounds; hence the delineations of objects accompanying and illustrating his micrographia exhibit enormous surface with comparatively little detail. Indeed when we consider the difficulties which stood in the way of discovery, we cannot sufficiently admire the zeal and perseverance with which Hooke pursued his researches; and the success with which, by a comparison of many separate observations, he established numerous valuable truths in natural [illegible]

To estimate duly the value of the microscope as a means of enlarging the boundaries of human knowledge, it is necessary to inform ourselves of the utter ignorance concerning some things, and the gross misconceptions regarding others, that prevailed prior to its introduction. Unless we advert to these points, we shall be too apt to look with a smile of self-complacency on the observations of the early micrographers, and to under-rate their discoveries, because recent times, with all the aids and appliances of advanced art, have elicited facts much more interesting and astonishing than any that are recorded by them. Before the invention of the microscope, the mite was considered the least of animated beings, and the existence of living atoms, with which compared, the mite may [illegible] as an elephant, had never been conjectured. The wondrous beauty and contrivance in the [illegible] and appendages of the insect tribes had never been beheld. The miracles of creative power [illegible] in every plant and blossom, had not been displayed. Vague and indefinite opinions were held regarding the vital fluid in animals; and the manner of its circulation through the body was but imperfectly understood. The strange fallacy of equivocal generation was universally maintained, and [illegible] corruption was deemed the parent of animal and vegetable life. It would occupy much space to name all the instances of ignorance and misconception that characterised the times in which the microscope was unknown; let those to which we have alluded, suffice to show how limited was the sphere of human knowledge regarding many things that daily met the eye, and how totally unconscious were the philosophers of those ages, of the wonderful creations that science and art were preparing to unveil. "Who," says Baker, "would have imagined it possible to distinguish myriads of living creatures in a single drop of water? or that the purple tide of life, and even the globules of the blood, should be seen distinctly rolling through veins and arteries smaller than the finest hair? That millions of millions of animalcules should be discovered in the semen masculinum of all creatures? That not only the exterior form, but even the internal structure of the bowels, and the motion of the fluids in a gnat or louse should be rendered objects of sight? Or that numberless species of creatures should be made visible, though so minute, that a million of them are less than a grain of sand?—These," he continues, "are noble discoveries, whereon a new philosophy has been raised, that enlarges the capacity of the human soul, and furnishes a more just and sublime idea than mankind had before of the grandeur and magnificence of nature, and the infinite power, wisdom, and goodness of nature's Almighty parent."

The observations of Leeuwenhoeck were directed to every conceivable object in the animal and vegetable kingdoms, and so indefatigable was he in his researches, that had he possessed instruments of sufficient power and delicacy, succeeding inquirers into the mysteries of nature, would probably have found themselves anticipated at every step. He left scarcely any thing unexamined that his microscopes would reach; and though improved constructions have unveiled wonders never revealed to him, they have rarely discovered errors in his observations, so far as they extend. The researches of his predecessor Dr Hooke, for the reason before given, were not so happily conducted; he greatly marred the usefulness of his discoveries by the assumption of unwarrantable hypotheses, and particularly by the pertinacity with which he clung to the doctrine of equivocal generation, though facts were daily disproving the monstrous supposition. In despite of these blemishes, however, he did good service to microscopic discovery; and some allowance ought surely to be made for the aberrations of a mind naturally inclined to speculation, when wonders new and strange were continually rising up before it to excite its energies, and, in not a few cases, to confound them.

The recent achievements of the microscope may be described as accurate examinations in detail of those objects which had been imperfectly observed by the early micrographers, owing to the comparative inefficiency of their instruments; new discoveries in the animalcular kingdom; and experimental inquiries concerning objects progressively suggested by constantly increasing information in the various departments of natural science. There are two classes of objects to which great attention has recently been directed, and concerning which many wonderful and interesting discoveries have been made: these are, infusorial animalcules and the microscopic *tests*. The information obtained respecting the latter class, may by some be esteemed more curious than useful; we believe, however, that few persons, on due reflection, will consider it beneath the dignity of science, to investigate the minutest atom, since it could be produced only by the same creative energy that evoked the universe into being. The elaborate examinations that have been made regarding infusorial animalcules, it will be admitted on all hands, have brought vast accessions to our knowledge of animated nature. Of these atomic germs of vitality, little had been previously discovered beyond the fact of their existence; and indeed many species, on account of their extreme minuteness, and the vast amplifying power requisite for their development, had not till very recently been observed at all. It is not however to their mere existence, that the microscopist now calls attention, but to all the details of their external form and internal structure, to their habits, modes of action, natural instincts, and to all the economy of their being. The mind is overwhelmed and confounded, whilst we read (as Mr Pritchard, in his *Natural History of Animalcules*, has enabled us to do) of the organization and vital properties of a living atom, so inconceivably minute, that five hundred millions of them in a mass would present little more than a sensible point to the unassisted eye. Such an announcement will be met by much scepticism, and scepticism in this instance is indeed pardonable; for with the object before him, the observer can scarcely yield his belief, whilst mathematical truth and actual observation are attesting the fact.

Test Objects.—Many of the improvements recently introduced into microscopic elements, are the results of elaborate inquiries, regarding that delicate class of objects named *the tests;* for the inefficiency of the ordinary constructions is never more apparent than when brought to bear upon them. Dr Goring has the merit of being the first observer of these objects, or at least the first to examine into all their details. His attention appears to have been drawn to them by the remarks of Leeuwenhoeck, on an observation of the wing of a silk-worm moth:—"If we examine the wings of this creature by the microscope, we shall find them covered with an incredible number of feathers, of such various forms, that if an hundred or more of them were to be seen lying together, each would appear of a different shape." The micrographer adds some allusions to "the ribs or streaks in each feather," which the limner he employed had difficulty in discerning under the power of his microscope. It appeared to Dr Goring, from these remarks, that there must be something about these feathers (or rather, *scales*) that fitted them for excellent *tests* of the defining and penetrating power of microscopes. He accordingly commenced an examination into all the varieties of plumage on the wings of papilio; and succeeded, at one and the same time, in developing their wonderful structure, and in determining some of the most important desiderata in the elements of the microscope. The scales of butterflies and moths are the principal tests of penetrating power; they form that impalpable dust which clings to the finger when we touch the wings of those insects. A variety of objects testing the defining power have also been brought under examination; of these the hair of the dermestis, bat, mouse, &c. are very remarkable. We defer more extended mention of these objects, till we come to describe the illustrative engravings.

Infusorial Animalcules.—The term infusorial is applied to the various species of animalcules, discoverable in vegetable and animal infusions. They exist naturally in all stagnant waters, wherein vegetable matter is decomposing; and they can be produced artificially by making an infusion of vegetable substances, and suffering it to stand till it has fermented, and become in some degree putrid. The most rational and philosophical way of accounting for the presence of animalcules in infusions, is to adopt the hypothesis, that the atmosphere is teeming with minute germs of animal and vegetable life,—that they form part of every thing we taste or touch,—but that for their perfect developement a suitable *nidus* is necessary, which nidus is presented in an infusion of some kind or other. These animalcular *ova* it would appear, depend much for the form they are to assume when evolved upon the peculiar nidus in which they are deposited; for the same infusion, in different stages of fermentation and putrescence, developes different species of animalcules. Or perhaps the ova themselves have distinct characters, and the infusion may become successively adapted for the developement of the various species. Leaving this point as one of mere conjecture, we pass on to observe, that optical science has rendered these animalcules legitimate subjects of natural history; and we are consequently to acquaint ourselves, as before observed, not merely with their extreme littleness, but with all the peculiarities that constitute their generic and special differences. We are indebted to Dr Ehrenberg, of the university of Berlin, for much of the information we now possess, relative to Infusoria. Prior to his elaborate examinations, they had indeed, to a certain extent, been classified by Muller and others, but they were almost uniformly described as atoms of gelatine matter, having no internal organs, and nourished wholly by absorption. In our necessarily brief description of this interesting class of animalcules, we shall avail ourselves of the kind permission granted us by Mr Pritchard, to extract from his very recent and valuable publications in this department of zoology. "The term animalcule, which implies nothing more than the *diminutive* of animal, has been commonly used to denote those living creatures inhabiting fluids, which are too minute to be scanned, or even seen, by the naked eye: such, for instance, as those produced in inconceiveable numbers from infusions of animal and vegetable matter: it comprehends as well such as are found in, and are peculiar to, the bodies of larger animals: this latter class, however, does not fall within the province of this work."

"In the variety of systems that have been put forth, respecting these extraordinary creatures, the main characteristics of each have referred either to a difference in their size, or to the general appearance of their external forms: the present design, however, is not to investigate the value of these. Until the introduction of vegetable colouring matter into the fluid, which supplies them with food, —an experiment that has been attended with very successful results,—these creatures were commonly supposed to be entirely devoid of internal organisation, and to be nourished by the simple process of cuticular absorption. By the application of coloured substances, which, moreover, have been found to invigorate, rather than depress the animalcule, and to maintain it in the full exercise of all its functions, this erroneous notion is set at rest, and an internal structure is discerned in some, equal to, if not surpassing that of many of the larger invertebrated animals, and comprising a muscular, nervous, and, in all probability, vascular system; all wonderfully contrived for the performance of their respective offices."

"The most obvious portion of their internal structure is undoubtedly that connected with the digestive functions; and hence it is that Ehrenberg has selected this as the leading feature of his arrangement, denominating his two grand divisions of the Phytozoa,—Polygastrica and Rotatoria; the former of which includes such as are possessed of several distinct stomachs or digestive sacs; and the latter such as have true alimentary canals, and rotatory organs, provided with a number of cilia aptly disposed for promoting the objects of life: these two grand divisions of the Phytozoa, are afterwards subdivided into families, and other minor branches. The *cilia*, in their different combinations, supply the means of locomotion, propelling the creature, in many cases, with great rapidity through the water: they are apparently stiff like eye-lashes; and from Dr Ehrenberg's description of some of the larger ones, they issue from bulbous substances at their bases, and being acted upon by muscular fibres, are capable of being moved to and fro, in particular directions, so as to occasion a current of the fluid to flow towards the mouth of the animalcule, by which it is furnished with fresh water, or food. They are sometimes disposed, as before stated, round certain organs of a circular form, which, on account of their peculiar vibrations giving the appearance of a rotatory action, are termed rotatory organs. A second curious feature in the construction of some of these minute creatures, are the *setæ*, or bristles, attached to the surface of their bodies: these short movable hairs in all probability act as fins, and contribute greatly to their means of motion. The third feature are the *Uncini*, or hooks, setaceous appendages curved at their extremities, and serving the creature to attach itself to any object it chooses. A fourth are the *Styli*, jointed at their bases, and differing from the cilia in respect of their being unable to effect a rotatory motion: these, however, are more flexible, and have more play than the *setæ*. Independently of these peculiarities, some animalcules possess the extraordinary faculty of thrusting out, or elongating, portions of their bodies at various points, which assuming the appearance either of lips or fins, are termed *variable processes*, and enable the creature to walk or swim."

"It was a favourite hypothesis with naturalists, some years ago, that the class of animalcules under consideration, was entirely nourished by cutaneous absorption, and that no suitable organs for transmitting and digesting food were discoverable. Baron Gleichen was the first who brought the truth of this theory to the test; for having tinged some water containing animalcules with carmine, he found on the second day, that only some distinct cavities in the interior of their bodies were filled with the colouring matter, evidently demonstrating the existence of an alimentary structure: here, however, he left the subject, and it is to Dr Ehrenberg's further investigation of it, that we are indebted for an accurate description of their different forms. In more recent experiments it has been found advisable to employ vegetable colouring substances in their pure state; such, for instance, as sap-green, and indigo, which, together with the valuable accession of an excellent instrument, enabled the doctor to contribute much to our previously imperfect knowledge of this branch of natural history."

"In the selection of vegetable substances for infusions," (for procuring animalcules; such as stalks, leaves, flowers, seeds of plants, &c. care must be taken that there be no admixture of quinine (bark) in them, or the infusion will be frustrated. Immerse these, whatever they may be, for a few days, in some clear water, when, if the vessels which contain them be not agitated, a film pellicle or film will be discerned on the surface, which, under the microscope, will be seen to be inhabited by several descriptions of animalcules: the first produce are commonly those of the simplest kind called *Monads*. In a few days more, their numbers will increase to such an amazing extent, that it would be utterly impossible to compute those in a single drop of the fluid. After this, again, they will begin to diminish in numbers, and I have generally observed them supplanted by others of a larger species and more perfect organization; such as the *Cyclidia*, *Paramesia*, *Kolpodæ*, &c. It is worthy of remark here, however, that in their production they do not pursue any regular order, even in similar infusions. If the vessel be large, and the circumstances under which it is placed sufficiently favourable, a still higher description of animalcules will succeed, viz., the *Vorticella*, and, lastly, the Brachione; and thus a single infusion will repay for the little trouble of making it with a great variety of species. Water in which flour has been steeped will be found to abound also with animalcules: and it is remarked by G. Leach, Esq., that the leaden troughs, constantly appropriated for birds to drink out of, contain several descriptions of them, and more especially those of the wheel genus. In ponds, too, especially in the shallow parts, near their edges, and in the immediate vicinity of water plants, prodigious quantities of all kinds may be easily procured; so that possessing as we do such myriads of them all around us, that they impregnate almost *every thing* that we eat, drink, touch, and breathe, an anxiety to know more about them, and the effects they produce, cannot but be regarded as rational and laudable."

"By a careful inspection of the Drawings," (Mr Pritchard refers to the elaborate engravings illustrating his *Natural History of Animalcules*,) "it will be noticed that some animalcules resemble spheres, others are egg-shaped; others again represent fruits of various kinds; eels, serpents, and many of the invertebrated animals; funnels, tops, cylinders, pitchers, wheels, flasks, &c. &c.; all of which are found to possess their own particular habits, and to pursue a course of life best adapted to their peculiar constructions: thus, for instance, while some move through the water with the greatest imaginable rapidity, darting, leaping, or swimming, others merely creep or glide along; and many are altogether so passive that it requires long and patient observation to discover any of their movements at all. One description are perceptibly soft, and yield easily to the touch; another are covered with a delicate shell or horn-like coat. Of the latter order there are different degrees of density, as in the Volvox, Gonium, &c., where the envelope is comparatively thick; and where, strange to say, the internal substance separates by the mode of propagation into several portions, forming so many distinct young ones, which at their birth burst the envelope and the parent becomes entirely dissipated. In others of this order the shell is merely a plate covering the body, resembling that of the tortoise: sometimes it includes the body, so as to leave only two small apertures at the extremities, and at others it is bivalve, and incloses the creature, like that of the oyster or muscle."

"All vertebrated animals are either oviparous or viviparous, which terms sufficiently designate their modes of production: but it is not so with animalcules; for, in addition to these two methods —1. Animalcules propagate by a spontaneous scissure, or division of their bodies into two or more portions, each one forming a new creature, which, on its arrival at maturity, pursues the same course. These divisions take place in some genera symmetrically, as in the Gonia, &c.; in others by transverse, longitudinal, or diagonal sections. In these latter cases the produce have forms differently proportioned from those of the creatures from which they spring. 2. They propagate, in the manner before mentioned of the Volvox, and some other genera, by a distribution of the internal substance of the parent into a proportionate number of young ones, all of which at their birth issue forth, and leave behind them nothing but the invelope, soon to be dissolved. 3. They are produced by germs, shooting forth from the parents' sides. 4. From spawn, which, in the act of being shed, carries along with it a portion of the parent animalcule."—*Pritchard's Natural History of Animalcules*, book I. p. 12—20.

In the foregoing extract we have given Mr Pritchard's lucid and perspicuous summary of all the peculiarities connected with infusorial animalcules; and we have studiously avoided any verbal alterations or omissions beyond what were absolutely necessary to its present isolated position. We feel that we have pushed our license to the extreme by quoting so largely; but we could not by a shorter excerpt have conveyed the information we desired, and indeed, had we attempted to do so, we should probably have presented the author's statements in a mutilated and garbled form, discreditable to ourselves and injurious to the character of his work. As we are farther indebted to Mr Pritchard for permission to copy a variety of figures from his book, we must necessarily refer to it again in the course of describing our illustrations. We trust, however, that we shall not be found to have misused the liberty conferred; and that all our excerpts, much as they must add to the value of the present essay, will only serve to convince the naturalist and curious inquirer, that his book is a necessary addition to their libraries, both with regard to copiousness of information, and the extreme truth and beauty of the illustrative engravings.

It would lead us too far away from the legitimate design of the present article to detail a variety of additional and interesting particulars relative to the Infusoria, that are recorded by Ehrenberg;—it may, however, be proper to make brief allusion to them. He has clearly demonstrated that the Infusoria are furnished with mouths and teeth, and he has even ascertained the number of the latter, their consistency, and characteristic differences. He has found them to be provided with assistant organs of digestion, respiratory organs, and a perfect vascular and nervous system. Even the eyes of these minute objects have been made the subject of his examination, and many remarkable particulars concerning them have been ascertained. Regarding their fecundity it is sufficient to state, on the professor's authority, that a single animalcule will in the course of three or four days become a multitude of separate existences, of whose number the human mind can form no idea. The inquiries of the same unwearied observer, relative to *fossil infusoria*, have issued in such amazing results, that we dare not in our narrow limits even trace their outline. Let it suffice to state—it is now an ascertained fact, that a large proportion of the siliceous formations of this terrestial globe, are actually composed of the testaceous coverings of Infusoria.

In completion of our design in the present article, we now proceed to describe and remark upon the accompanying engravings illustrative of microscopic discovery. We would just observe, in this place, that we have purposely taken an extended range in the selection of objects, to show the inquirer into nature's mysteries, that an examination of details, throughout the whole compass of animate and inanimate matter, presents much to interest and instruct; we have likewise employed extreme powers for their developement, it being our wish at one and the same time to exhibit what the *microscope* can do in all its efficiency, and what the *observer* can do with an instrument of very limited powers.

A very interesting and remarkable class of microscopic objects is presented in the hairs of different animals, which exhibit a most wonderful variety and delicacy of formation. Hooke, Leuwenhoeck, and others, endeavoured to discover their peculiarities, and to a certain extent they succeeded; but the instruments used by these early micrographers, wanted the defining power necessary for the perfect development. We have introduced seven varieties into our illustrative engravings, and from these we believe a good general idea may be formed concerning this description of objects.

Plate 90, fig. 1. *The hair of the Dermestes.*—This insect belongs to the order *Coleoptera*, (see Entomology), and is remarkable for the beautifully formed hair which covers it in the larva state. There is a variety in the structure; some of the hairs resembling an oat bread, and others exhibiting the character shown in our specimen. A more delicate and beautiful object than the spear-shaped hair can scarcely be submitted to the microscope. The lowest power by which it can be seen, is 100 linear, but to develope its details satisfactorily, a power of 200 linear is requisite, which is the one we have used. This object is considered an excellent test of the defining power of a good microscope.

Fig. 2. *The hair of a Mouse.*—The characteristics of this object, when viewed by transmitted light, are dark transverse stripes, some of which are broken, whilst others extend quite across the hair. On closer observation these appearances are discovered to arise from a kind of spiral spring occupying the tube of the hair, and a number of imperforations on the surface.

Fig. 3. *The hair of a Bat.*—From the resemblance between the mouse and bat, it will excite a little surprise to observe the very decisive difference of structure in the hair of these two animals. That of the latter sometimes presents the appearance of a screw, or of a number of small conical cups inserted into each other; other specimens seem to be formed of two distinct hairs twisted together; and some exhibit, in connection with these peculiarities, striped markings resembling those on the hair of the mouse.

Fig. 4. *The hair of a Bee.*—This is a very beautiful object, but requires a good defining power to show the structure satisfactorily. The hair itself resembles a jointed bamboo cane; and from each joint small delicate spikes shoot out. The hair terminates in a number of these spikes, one of which is uniformly longer than the rest.

Fig. 5. *The hair of a Dormouse.*—This object very much resembles the hair of a mouse. The points of difference seem to consist in the regularity of the stripes on that of the dormouse, and its greater delicacy.

Fig. 6. *The hair of a Mole.*—This is a very singular structure. The interior exhibits the remarkable spiral observed in the hair of the mouse and dormouse, and the exterior presents a formation somewhat similar to that of the bat's hair.

Fig. 7. *The hair of a Caterpillar.*—We notice a strong resemblance between this object and the hair of a bee. The tube of the hair is not jointed, however, in the caterpillar; and the lateral spines are the contrary way. This and the preceding figures are all shown under a doublet linear power of [illegible]

Fig. 8. *A filament of Feather Down.*—This exhibits an exceedingly minute formation that was observed under a doublet linear power of [illegible]. The exquisite finish of the joints was very remarkable.

Fig. 9. *The Down of a Flower.*—The down of flowers may in some cases be termed a parasitical plant that is nourished by the florescence to which it clings till it is able to provide for itself; in other cases, it is an appendage to the seeds of the plant with which it is connected, and furnishes them with means of conveyance to places far distant from the parent flower. To this wonderful provision of nature for the propagation of vegetable life, we are to attribute the verdure and floral loveliness of those sequestered spots, where the cultivating hand of man has never been employed, and where the human foot has rarely trod. The summer gale wafts these vegetable fibres over the earth, they alight in their course, cling, take root, and ultimately spring up an hundred fold. The formation of the down of flowers, presents a wonderful variety. It sometimes appears plain and smooth, at others, rough and thorny, with little hooks or barbs, by which the fibre clings to the spot where it has fallen, and is enabled to strike root into the earth. There is no class of microscopic objects more interesting and instructive than this; and the details of the various species may, in most cases, be developed satisfactorily by an instrument of very moderate power. The object shown in the engraving is a fibre of thistle down, as it appears under an amplifying linear power of eighty.*

When speaking of the test-objects, we noticed a remark by Leeuwenhoeck, regarding the scales of butterflies,—"that if an hundred, or more, of them were to be seen lying together, each would appear of a different shape." Now, though the observation is strictly true, inasmuch as there is the same variety exhibited in the formation of these atoms as in that of the human countenance, still this is not the grand point of admiration; the most wonderful fact connected with them is, that amidst all the variety of individuals, we can no more mistake the different species of these scales, than we do the various species of the human race, in consequence of the great variety of features observable in each. Let Materialists, and Owenites, and all who would dethrone Deity, and deify matter, inform us regarding those subtle laws which determine with such wonderful exactness the formation of these atoms. If brute matter possesses an inherent plastic energy to mould structures like these, let us no longer exalt mind and reason, but refer them to a subordinate place. If, however we refuse reason priority of place over mere matter, what becomes of the reasoning of these men? There's the rub.

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* We have expressed the magnifying power in linear measure, with reference to this and the preceding objects. The reason for doing so will be obvious.

Fig. 10. *Scale of the Red Underwing Butterfly.*—This minute atom exhibits a very beautiful formation, under a deep power of the microscope. The longitudinal striæ are resolved by a good penetrating power into what may not unaptly be termed strings of beads. It is asserted that this appearance in the object under review, and in others of this class, is produced by the interlocking of the serrated edges of the fibres composing the scale. We have not ourselves observed anything confirming this opinion, and therefore content ourselves with exhibiting the object as we saw it, under an amplifying power of 90,000 on the surface. To avoid repetition, we may observe that the power just mentioned applies to the succeeding objects so far as No. 20, inclusive.

Figs. 11, 12, 13. *Scales of the Brassica Butterfly.*—These are three varieties of scales from the wings of the Brassica. Fig. 11, resembles in the striæ the scale of the red under-wing; but there is a marked difference in the contour of the two objects. Fig. 12 exhibits a very delicate and transparent scale, with exceedingly fine longitudinal striæ. We consider this object a very severe test of defining power, for many instruments that will show the markings of the podura with much distinctness, fail to develope it; it requires a very skilful management of the light, a most accurate adjustment, and a faultless doublet, to exhibit it satisfactorily. Fig. 13 is termed the Brassica *curiosa;* it is no less remarkable for its exterior form, than for the singular disposition of the striæ on its surface.

Fig. 14. *Scale of the Menelaus Butterfly.*—This object consists of a fine tissue overlaid with strong and well defined lines. The latter are frequently detached from the tissue, or membranous part, as shown in our specimen; and consequently there can be no illusion or misconception regarding these lines, which are evidently fine fibrous cords in relief, upon the surface of the scale.

Fig. 15. *Scale of Papilio.*—This is a very singular scale observed amongst a miscellaneous group. The longitudinal striæ are strongly defined, and the cross markings arise from a contraction, or shrivelling up, of the membraneous part between each two of the striæ.

Fig. 16. *Scale of the Azure Blue Butterfly.*—The light coloured and most diaphanous scales of this species form beautiful test objects for the microscope. The striæ are delicate, but are easily defined by a good doublet.

Fig. 17. *Scale of the Podura.*—The podura, or skiptail, a small insect found in wine cellars, is most readily obtained by examining a small quantity of the dust in which the wine is packed, under a moderate power of the microscope. This little creature is covered with exceedingly minute scales, which have been adopted as microscopic test objects of the very first class. A most accurate adjustment, excellent defining power, and a judicious management of the light, are requisite to develope this delicate structure. The longitudinal striæ are wrought out with most difficulty, though some observers contend that the waved lines, frequently observable on the larger scales, are a more severe test.

Fig. 18. *Scale of the Lepisma.*—The lepisma is a small fish-shaped insect, of pearly whiteness, overed with a number of delicate scales, one of which is shown in our engraving. The striæ on this object are easily developed, and they have the same character with those on the scale of the menelaus, as is evidenced by the partial detachment of the lines from the membraneous tissue. There is a variety in these scales: the one we have selected, and on which the markings are more delicate, is nearly oval shaped; but there are others much resembling a shell, and having the upper edge scalloped very regularly. Diagonal markings are perceptible on most of the latter species; these appear to be produced by spiny projections from the longitudinal lines.

Fig. 19. *Scale of the Diamond Beetle.*—Every possessor of a microscope will be familiar with the wing-case of the diamond beetle,—one of the most beautiful opaque objects on which the eye can rest. We may compare the appearance it presents to that of the ancient Jewish breast-plate; a number of small cavities, regularly disposed over the surface, are filled with a vast number of small scales, which reflect every variety of hue, and exhibit a lustre and magnificence that dims the splendour of the most richly arranged jewellery. Our figure shows one of these minute scales, with its semi-opaque spots and striated markings.

Fig. 20. *The scale of a Moth.*—This object is very opaque, compared with preceding ones, and it is consequently difficult to trace its structure with much precision. The contour, it will be seen at once, is that of a leaf; and the vegetable analogy would seem to extend much farther. This scale appears to consist of a fibrous frame-work, resembling very much the skeleton of a leaf; and the interstices are filled up with a mossy substance, whilst the prismatic reflections, and other characteristics of the surface would indicate that smaller scales are scattered over it.

Fig. 21. *Disposition of the Scales.*—This is a small diagram, intended to convey an idea of the disposition of the scales on the membrane of a butterfly's wing. The double lines of points mark the places where the scales are inserted; and it will be noticed that there are two sets of them, one considerably shorter than the other. The longer scales are inserted in the upper line overlapping each other, and the shorter, in the line beneath; by which means these extend to the middle of the long scales, and have their extremities covered by the next line.

Figs. 22, 23, 25. *Wings of Insects.*—To have given with full effect the remarkable details in the wings of insects, we must necessarily have shown them on a very large scale, and by consequence have restricted our illustrations to a very small number, which would not have fulfilled the design in view. The reader will therefore consider these figures as little more than an indication of the wondrous beauty, delicacy, and variety discoverable in this class of objects. Indeed, the amplifying power under which they are shown, is scarcely 60 on the surface. Fig. 22, exhibits the wing of a gnat with the beautiful fringe on its circumference, the spinated fibres, and the delicately marked membrane. Fig. 23, shows the general character of the wing of the ichneumon fly. Fig. 25, is the beautiful shell-shaped wing of the earwig. These three objects come up in a very pleasing and interesting manner under a compound power, sufficiently moderate to keep the whole figure in the field.

Fig. 24. *Foot of a Dytiscus.*—This figure exhibits, under a very low power, the foot of that most

voracious aquatic fly, the dyticus. Our illustration is confined to the strong claws or talons with which it is armed, but a more important and interesting feature is the web that surrounds the foot; this, however, from its complicate structure, could not have been effectively shown on a small scale.

Figs. 26, 31, 34, 35, 36. *Feathers of the Humming Bird, and details.*—These figures embrace many interesting particulars connected with the minute feathers of the humming bird. The complete feathers (Figs. 31, 35.) are about one-tenth of an inch in length. We commence with Fig. 35, which exhibits a singular feature in these objects—a number of long slender pods (such we term them) of a bright orange colour. Fig. 34 shows one of these pods enlarged, and Fig. 36 one of the fine lateral fibres very highly magnified. In process of time these pods burst open, and assume the character indicated in Fig. 26; and ultimately the whole feather takes the character shown in Fig. 31.

Fig. 27. *Transverse Section of a Hedge-hog's Quill.*—Remark on this object is unnecessary. Power, 100 on the surface.

Fig. 28. *Farina of Flowers.*—Few persons can have failed to notice the fine powder on the tops of flowers; this is the farina, or pollen, necessary to the propagation of plants. Without the aid of the microscope, however, we could never have discovered the various beauty of the impalpable atoms composing this flour-like substance. Fig. 28, is the farina of the marsh-mallow, which consists of small globes, thickly studded with prickles.

Fig. 29. *Seed of the Calampelus Scaba.*—This object is shown under a very low power, the intent being merely to define more clearly the singular fringe round it, an appendage provided to facilitate its transit over the earth.

Fig. 30. *Seed of the French Marigold.*—This remarkable seed is particularly worthy of observation; it is here shown under the low power of 100 on the surface, our space not admitting a larger figure of it; but when examined in detail with deeper magnifiers, a wonderful structure is exhibited, which is only indicated in our view. The true character of the spinated fibres, forming what we may term the wings of the seed, may be seen in Fig. 9. It will be evident, at a glance, that this vegetable embryo is wafted from the parent stem by the gentlest gale; and when deposited in a favourable spot, the barbed fibres facilitate its entrance into the soil on which it has fallen.

Fig. 32. *The Tongue or Trunk of a Fly.*—Here is one of the most interesting and beautiful objects that can be submitted to the microscope; and an instrument of very limited power is able to develope its principal features. Our anatomical knowledge does not enable us to describe all the parts and define their uses; we shall therefore content ourselves with quoting Baker's remarks. "The trunk of a fly consists of two parts, folding over one another, and sheathed in the mouth. The extremity thereof is sharp like a knife, for the separation of anything. The two parts can also be formed, occasionally, into a pair of lips for taking up proper quantities of food, and by the fly's sucking in the air, they become a kind of pump, to draw up the juices of fruits or other liquors." This object is shown under the amplifying power of a Coddington lens of one-tenth inch focus.

Fig. 33. *Polypody and Seed of the Oak.*—There is a species of fern, called *polypodium*, which grows parasitically on the bark of the oak. The seed of this minute plant is contained in a kind of bag or pod, and the number of seeds in each pod corresponds to the divisions on its circumference. These objects are shown in our figure, as detailed by a superficial magnifying power of 40,000.

Plate 91, fig. 37. *Leaf of Bog Moss.*—This is a very delicate structure, about the tenth of an inch in length, and forms a very pleasing transparent object. A superficial power of 100 (the one we have used) is sufficient to define it perfectly.

Fig. 38. *Species of Sea-weed.*—This object is viewed under the same amplifier as Fig. 37.

Fig. 39. *Transverse Section of the [illegible].*—Under the same power, of 100 on the surface, is here shown the beautiful structure of the [illegible]. Our space would not allow the introduction of the entire figure.

Fig. 40. *Fibres of the Palm.*—The singular formation and extreme delicacy of the fibres of the palm, as developed by a superficial power of 90,000.

Fig. 41. *Fossil Insect (?)*—This object has peculiar interest for the geologist, to whom we freely resign the task of determining its history. It has been discovered in a siliceous formation, at Uckfield in Sussex. A very thin section of the flint, scarcely half an inch square, forwarded to us by Mr Cary of the Strand, contains no fewer than ten of these insects, which, it will be seen, bear a very strong resemblance to the mite. Our figure shows the object, on rather an enlarged scale, as developed by a superficial power of 90,000.

Fig. 42. *Seed-vessel of Moss.*—This curious receptacle for the seed of moss is shown under the superficial power of 100.

Fig. 43. *The Trunk of a Bee.*—That "the bee sucks honey from every flower," is a fact familiar to the youngest amongst us; but the nature of the apparatus with which it is provided for this purpose, is not so generally known. The trunk or proboscis of the bee is here shown under a [illegible] power of 100, which is fully sufficient. The resemblance to the trunk of an elephant will be at once detected, not so much in the termination, as in the parallel rings that extend along its whole length, these latter enable the insect to extend, contract, or stretch out its trunk at pleasure. The object is well worthy of observation, and it is one of those which come within the reach of every instrument.

Figs. 44, 45. *Crystals of Common Salt.*—The primitive form of these crystals is a cube, but they frequently combine and produce an [illegible] figure, which is nothing more than an [illegible] of cubes rising in layers above each other. [illegible] times these compound crystals present only plane faces, as in Fig. 44; at others the process of accumulation is distinctly marked by parallel lines, as in Fig. 45. It is most beautiful to watch the actual formation of these crystals under the microscope, which is easily done by dissolving a few grains of salt in a drop of water, and covering a slip of glass with the solution; then placing the glass under the object lens, and adapting the [illegible] you observe, as the moisture evaporates, the formation and gradual increase of the crystals. [illegible] there is a decisive difference in the crystals of [illegible] various salts, a vast fund of entertainment and instruction may be drawn from an observation of [illegible] different species, and even from the variety of figures which one solution presents to view.

Figs. 47, 48, 52. *Crystalline figures of Common Salt.*—A solution of common table salt presents, in addition to the perfect crystals, a variety of singular configurations. Fig. 47. resembles a coralline formation, and is composed of a vast number of small cubes irregularly disposed, which from their extreme minuteness exhibit, under the most powerful magnifiers, only an aggregation of shining dots. Fig. 52 is a similar formation, except that all the lines are parallel or at right angles to each other. Fig. 48. is a more complicate configuration; the middle stem is first formed, and afterwards the processes on each side branch out. This formation much resembles a crystallization of soda.

Fig. 46. *Crystals of Saliva.*—If a slip of glass be wetted with the tongue, and afterwards submitted to a powerful amplifier, the gradual evaporation of the moisture will discover a crystalline formation very much resembling Fig. 52.

We advise those who may take an interest in witnessing the astonishing process of crystallization, as developed under the microscope to use a compound instrument, which gives them extensive field, and considerable power, yet enables them to keep the object at some distance from the ens, by which the evaporation of the solution is es liable to condense upon the objective glass, and disturb the observation.

Figs. 50, 51. *Snow Flakes.*—An almost infinite variety of form is observable in the minute crystals of a snow flake; the beautiful and complicate figures they present are truly wonderful, and fully reward the observer for the frequent disappointments he must suffer in attempting to bring them effectively under the microscope. The specimens shown in our engraving are copied from the delineations of other observers.

Fig. 49. *A Transverse Section of the Clematis.* —The delicate structure of this object is shown under a superficial power of 400.

The remaining 17 figures, viz., from Fig. 53 to Fig. 69, inclusive, refer to Infusoria. For these, we have before noticed, we are indebted to Mr Pritchard, who permits us to copy them from his *Natural History of Animalcules;* from the same talented and beautifully illustrated work we extract so much as is necessary in the way of particular description and general information. It will not be out of place to notice here, that Mr Pritchard has caused copies of his elaborate engravings to be delicately and accurately coloured; and we can scarcely conceive a more valuable companion to the microscope.

The subjoined table exhibits the genera of the Infusoria, the number of species ineluded under each genus, and the individuals selected for illustration of special character.

Genera.	No. of Species.	Individuals.	Fig.
Monads.	21.	The Drop Monad.	65.
Proteus.	3.	The Melting Proteus.	66.
Volvox.	12.	The Vegetable Volvox.	67.
Enchelis, with the Bacterium of Ehrenberg.	33.	The Egg-shaped Enchelis.	61.
Vibrio, including Bacillaria, Phytozoa, Entozoa.	59.	The Stick Vibrio.	68.
Cyclidium.	12.	The azure Cyclidium.	62.
Paramæcium.	7.	Paramæcium chrysalis.	63.
Kolpoda.	16.	The Cuckoo Kolpoda.	64.
Gonium.	7.	The Breast-plate Gonium.	69.
Bursaria.	5.	The little Swallow-like Bursaria.	60.
11. Cercaria.	25.	The Green Cercaria.	59.
12. Leucophrys.	28.	The Bracelet Leucophrys.	54.
13. Trichoda.	91.	Trichoda vulgaris.	55.
14. Kerona.	14.	Kerona pullaster.	56.
15. Himantopus	7.	Himantopus larva.	56.
16. Vorticella, including Polygastrica, Rotatoria.	70.	Vorticella cyathini.	57.
17. Brachiouus.	22.	Brachionus passus.	53.

It will be noticed that in stating the number of species under each genus, we confine ourselves to those figured and described by Mr Pritchard; this explanation is necessary, as in some genera the species are more numerous in the arrangement of other naturalists.

Monads.—"This genus of animalcules includes the smallest forms in which a voluntary motion has been observed, even under the most powerful microscopes: this motion, until recently, appeared to be the only property of life with which they were endowed; but the observations of Dr Ehrenberg demonstrate an organization equally perfect with animated beings of much larger dimensions. Their forms in general are simple, spherical, or cylindrical masses, devoid of external members or processes:* the mouth, which is with difficulty discerned, is a simple orifice, not furnished with ciliæ or hairs, (except in one or two species:) they are colourless, and transparent as the clearest crystal, yet can no internal organization be seen, excepting that connected with their digestive function, which consists of two or more globular cavities or sacs, probably communicating with each other by a tubular membrane, as in the larger polygastric animalcules, but which in this genus is too minute to be discerned; indeed, the stomachs or sacs themselves are only to be observed when the animalcule is fed with particles of colouring matter: the food on which they usually exist being as pellucid as themselves, the cavities are invisible. They increase by a spontaneous division of the parent into two or more parts, and those parts, or young, again divide when they have attained their full size."

"As subjects of observation they are principally interesting from their minuteness, being as they are, the very limit of man's acquaintance with animated nature. Their diameters vary from 1-24000th of an inch to 1-1200th, and consequently require a very high magnifying power to discern. They are numerous, and generally found congregating at the surface, and around the decomposed matter of infusions, either of vegetable or animal substances."

Fig. 65. *The Drop Monad.*—"This animalcule is larger than the Atom Monad, and somewhat globular. On account of its size and transparency, its digestive cavities can be much more distinctly observed. It revolves about its longer axis, and in swimming, that part which contains the coloured particles follows the colourless part. Occasionally, with attentive observation, currents in the water may be seen about the fore-part or mouth; it is therefore highly probable that it is furnished with ciliæ or hairs. Those found at Petersburgh, measured from 1-3000th to 1-2300th of an inch in diameter: they are represented in the group magnified 380 times."†

Proteus.—"We now arrive at a larger genus of animalcules, whose habits are highly interesting and curious: indeed there are few in the examination of which I have been more delighted. This gratification arises, not so much from any complexity in their organization, which in comparison with the *Brachionus*, and some of the Vorticella, is more simple, but from the great power they possess of dilating their bodies; and their motions being slow, the observer is enabled to examine their changes of form distinctly. Their generic character, according to Müller, is, 'that their form is changeable, extending variable feet-like processes at pleasure.'"

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* My observations on the *mona punctum* require a modification of this part of the definition, or removal out of this genus. A. P

† Mr Pritchard merely states the magnified diameter.

Fig. 66. *The Melting Proteus.*—"The drawing of this animalcule I took from a specimen found in some water containing duck-weed (*lemna major*), in the month of March. They are very scarce. Müller states he only saw them twice. Their diameters vary from 1-600th to 1-300th of an inch."

Volvox.—"The animalcules belonging to this genus are of a globular form, and revolve in the water. Some of the species are so large as to be discerned by unassisted vision, while others are very diminutive. Ehrenbreg has not demonstrated their digestive organization; but in a note to his table, conceives they ought to follow the monads. In this genus is included that beautiful animalcule, called the *Volvox globater*, which forms so interesting a spectacle in the solar and gas microscopes."

Fig. 67. *The Vegetable Volvox.*—"This animalcule is rather scarce. Its most interesting character is the short time which it requires in arriving at maturity, and undergoing all its changes. In the space of half an hour, when fed with an infusion of indigo, a single globule may be observed to emerge from a naked branch, increase in size, and divide into a cluster of smaller ones; these increase also, and after revolving, and bringing a current of food towards them, finally separate, and swim away, each of the young ones commencing a similar course."

"It consists of several opaque branches: at the termination of each is a small congeries of egg-shaped transparent bodies. Müller, who seems to have only seen them once, mistook them for a vegetable production, until he observed the clusters to separate from the branch, and swim about at pleasure."

"These animalcules produce a rapid current of water towards them as indicated by the arrow in the figure; and if supplied with plenty of coloured food, as indigo, they will not only assume the colour of the particles, but may be seen to increase in size, under the eye of the observer. When the cluster is fully developed, it breaks off, and swims away, revolving as it proceeds. After roving about for a few minutes in search of a proper nidus to attach itself to, it spins a very delicate thread, like a spider's web, one end of which it fixes to the substance it has selected: this filament, when drawn out to the proper length, increases in size, and assumes the deep blue colour of the indigo, while the end of the stalk which it left shoots forth a new cluster. The current above mentioned is sometimes produced without any revolution of the cluster of globules, at other times I have observed the whole cluster to revolve. The magnifying power which I employed, while making the drawing of this figure, was nearly 500 times. The medium diameter of the clusters, while attached to their branches, I find to be about the 800th part of an inch; and when fully developed and separate, about 1-400th of an inch Müller discovered these animalcules in river water in the month of November. Those on which the above observations were made, I found in the month of June, in some pure water."

Enchelis.—"This genus of animalcules, according to Müller, contains twenty-seven species. Its definition is, 'a simple invisible animalcule, of a cylindrical form.'" "The size of the different species varies considerably, and therefore requires different magnifying powers to exhibit them (from 200 to 500 linear). If the reader have an opportunity of examining any of them, in instruments of different constructions, but of the same magnifying power he will readily perceive that there is something besides magnifying power that is essentially requisite in a microscope, in order to show the details of objects."

Fig. 61.—*The Egg-shaped Enchelis.*—"The animalcule is distinguished by its polished appearance, and the longitudinal folds of the external membrane. A few bright spots are also sometimes observed; these have been supposed to be the ova, but it is more probable they are the sacs of the polygastric structure. The figure is a magnified representation, showing the sacs and folds, neither of which are constant. Found in stagnant water."

Vibrio.—"The extensive range of the genus in regard to the structure, form, and size of the different species, offers great variety to the observer." "It includes animalcules, both membranous and crustaceous: some as slight as a thread, others whose breadth nearly equals their length; some whose organization is so complete that modern naturalists have entirely excluded them from the polygastric class and others, which are with difficulty distinguished from vegetables. To diminish somewhat these incongruities, without rendering the arrangement complex, I have separated them into three divisions. The first is the simplest, and requires a magnifying power of from 200 to 300 times to examine them; the second and third vary so much in size that some do not require half that power, and a few even less, being just discernible by the naked eye. The definition given by Müller to the animalcules under this name, is, an invisible worm, *very simple, round, and rather long.*"

First-division,—Bacillaria. "These minute and inactive animalcules are covered with a hard shell-like coat, and appear closely allied to some of the fresh-water Algæ, and are not very appropriately classed with the *Vibrio.*"

Second division,—Phytozoa. "The term was first made use of by Goldfuss, and is confined by Ehrenberg to those microscopic creatures whose digestive organs are polygastric, or, if they possess a simple alimentary canal, it is always accompanied by rotatory organs."

Third division,—Entozoa. Includes those animalcules of the Vibrio genus, which "possess an alimentary canal, but no cilia, nor coloured [illegible] when immersed in a mechanical mixture of coloured particles."

Fig. 68. *The Stick Vibrio.*—"This animalcule or rather congeries of animalcules—for they are mostly attached together in different forms—when magnified appear like pieces of straw of a pale yellow colour, with the inside of an orange brown. They are nearly round, and, if attentively watched, may be seen occasionally to turn upon their longer axis, when a longitudinal line may be observed; this is probably the hinge or opening of their shell. They vary in length from 1-800th to [illegible]

an inch, and their diameter is from 1-20th to 1 100th of their length: they require considerable magnifying power, and large angular aperture, to distinguish their structure." "I find, on reference to my notes, made at different times, that it was not until after I had examined them repeatedly, I became satisfied of their animal vitality. They generally reside at the bottom of ponds, but after rain are met with near the surface, giving the water a green tint; in such cases they are found separate, the agitation of the water having broken the clusters."

Cyclidium.—"This genus is composed of animalcules of a flat, round, or oval form, without any apparent cilia. Like some others, they are so very diaphanous that the most delicately finished engravings of them, afford but a faint idea of their exquisitely brilliant, crystal-like appearance, when viewed under a good achromatic microscope of large angular aperture."

Fig. 62. *The Azure Cyclidium.*—"Is of a flat oval form. In its usual condition it is pellucid, but when fed with colouring matter, dark spots may be seen, as in the drawing. In swimming it sometimes rotates, and exhibits its narrow side to view; and if the water be filled with opaque particles, a current may be perceived towards the front of it, indicating the presence of cilia, which, however, can only be seen when the animal is expiring. These creatures propagate by division, during the progress of which they alter their form. They require a magnifying power from 400 to 800 times to view them distinctly. Length, 1-1400th to 1-1800th of an inch."

Paramaecium.—"The animalcules included in this genus, are membraneous, long, and rather flat. Ehrenberg supposes these and the kolpoda to be the same as the monads, and cyclidia, at a more advanced stage of their growth."

Fig. 63. *Paramaecium chrysalis.*—"These interesting creatures appear like milk white specks to the naked eye. They are soft, and yield to the pressure of any hard substance they may come in contact with. The body is long, and in some positions the cuticle appears to have a diagonal fold, as shown in the figure. The mouth aperture is situated on the inferior side, near the middle, and in some views it appears like a papillary projection. In good microscopes the body is seen covered with longitudinal rows of hair; by means of these, the creature is enabled to produce a current in the water towards its mouth. They propagate by transverse division. These animalcules are well adapted for exhibiting the structure of the alimentary organs, as they are of sufficient magnitude to render the sacs clearly perceptible, when filled with coloured particles. On the introduction of indigo into the water they are greatly agitated; in a few minutes, however, they are quiet, and the digestive sacs become coloured, as in the drawing, when from 100 to 200 may be enumerated. Length, 1-85th to 1-200th of an inch."

Kolpoda.—"This genus is thus defined by Müller: 'an invisible, very simple, pellucid, flat, crooked animalcule.' They vary much in external form."

Fig. 64. *The Cuckoo Kolpoda, or common Bosom animalcule.*—"Its general contour has some resemblance to a bean; and if we suppose the two convex lobes or the front side equal, and do not perceive the proboscis, which indeed is seen with difficulty, we shall distinguish some likeness to the bosom; from which similitude it has received its name. The mouth, which is lighter tinted than the surrounding parts, is situated in the hollow between the upper lobe and the proboscis, and marked by a cross, while the termination of the alimentary canal is in the cavity immediately below the proboscis. The margin of the two lobes is furnished with a row of delicate cilia, only observable under favourable illumination. These cilia, by producing a current in the water towards the mouth, perform the same important office as members in some of the mammalia; as the current brings all the particles of matter in the water to the mouth in regular succession." "By feeding them on vegetable colouring matter, the polygastric form of their digestive organs is readily distinguished." "Length of full grown specimens, 1-280th of an inch. They are found in various vegetable infusions, and especially in those of hay which have been kept a considerable time."

Gonium.—"The animalcules of this genus are in clusters; they are propagated by several incisions across the body of the parent, dividing it into a number of symmetrical forms. When observed singly, most of the species resemble the volvox. The structure of their digestive organs is not known. Müller defines this genus as composed of 'invisible, simple, smooth, angular animalcules.'"

Fig. 69. *The Breast-plate Gonium.*—"It consists of sixteen spherical bodies, disposed regularly in a quadrangular form, like the jewels in the breast-plate of the Jewish high priest. They are all arranged in the same plane; the four centre ones are generally larger than those which surround them; and the diameters of the three smaller balls are only equal to the two larger centre ones to which they are attached; the external corners are consequently vacant." "The diameters of the clusters vary from 1-350th to 1-200th of an inch." "They are found near the surface of clear water, and often along with the *Cercaria viridis.* A magnifying power of 200 is sufficient for their examination."

Bursaria.—"'A simple, hollow, membraneous animalcule,' which takes its name from its bag or purse-like form. Ehrenberg has only noticed one species, and has not decided as to the situation of the genus."

Fig. 60. *The little swallow-like Bursaria.*—"The form of this animalcule, by a little effort of imagination, may be compared to a bird, and its movements appear like the flight of the swallow: hence its name." "It is found in stagnant water.

Cercaria.—"An 'invisible, pellucid animalcule, with a tail.' If we consider the internal organization of this genus, it comprehends a very wide range; indeed, the different species vary so much that it is difficult to give a general definition of their characters with any degree of accuracy."

Fig. 59. *The Green Cercaria.*—"This is a highly interesting creature: the bright green colour of its body; its diaphanous extremities; its well-defined orange brown eye; and the numerous transformations of its form, render it a very entertaining object for the microscope; in addition to which it is easily procured, and managed with great facility." "The length of the specimens which I have examined was about 1-350th of an inch: Ehrenberg gives 1-280th as their length." "The magnifying power best adapted for viewing them, is from 300 to 500 times, in an achromatic."

Leucophrys.—"Diaphanous, ciliated animalcules."

Fig. 54. *The bracelet Leucophrys.*—This animalcule is shown in the figure with a portion of the inner edge ciliated.

Trichoda.—"Diaphanous, partially ciliated animalcules."

Fig. 55. *Trichoda vulgaris.*—"Whose crustaceous covering is the shape of a cup, at the circumference of which radiate several strong spines."

Kerona.—"Animalcules furnished with hooks (*uncini*), bristles (*setæ*), or horn-like processes."

Fig. 56. *Kerona pullaster.*—"The fore part, in addition to the cilia, is stated to have three setæ. The cilia at the opposite extremity, are often separated; at other times they are collected in a cluster."

Himantopus.—"Pellucid animalcules, with a cluster or tuft of hair."

Fig. 58. *Himantopus larva.*—"This is a very lively creature, swimming and turning in the water in a graceful and diverting manner, inflecting itself, as shown in the figure; the body gradually decreases towards the posterior, and at intervals several hairs appear disposed along it. The margin is fringed."

Vorticella.—"They vary much in their organization; hence I have formed them into two divisions. They are naked, contractile, and possess cilia, circularly disposed near the mouth, producing a vortex in the water; in many of them they appear to rotate like a wheel."

First Division,—Polygastrica. Including the animalcules which possess a number of digestive sacs or stomachs.

Second Division,—Rotatoria. The highest class of infusorial animalcules, so named from their rotatory motion.

Fig. 57. *Vorticella cyathina.*—"This animalcule is shown swimming freely; the edge of the bell is ciliated, though not exhibited in the sketch: it can attach itself by the stem, which it contracts spirally."

Brachionus.—"This genus is composed of animalcules enclosed within, or partially covered by, a shell-like coat. They possess rotatory organs, like the vorticella, and form, in Ehrenberg's arrangements, a parallel order."

Fig. 53. *Brachionus passus.*—"A curious little creature, with two long bristles in front, like the antennæ of an insect."

It is proper to notice here, that our space did not allow us in many instances to transcribe the whole of Mr Pritchard's descriptions, but only so much as was absolutely necessary to convey general information on the subjects illustrated. Though, indeed, we rather owe an apology to the author for taking so much of his admirable performance, than an explanation to our readers for taking so little.

We have now completed the design which we proposed to ourselves in the opening of this article. That we have added something considerable to the *popular* knowledge concerning the microscope and the wonders it reveals, may, we think, without vanity, be assumed; for with the aids and appliances so courteously presented for our assistance, we could scarcely fail to communicate much interesting information on the subject. It does not perhaps fall within our province to moralize on the theme of this essay, otherwise it would be easy to show that there is something connected with microscopic research infinitely more important than the gratification of an abstract curiosity regarding the minute world. It will be neither tedious nor out of place, however, to observe, that the transactions and phenomena revealed by the microscope present a phalanx of arguments asserting the being and unceasing providence of a God; while they create a deep conviction in the heart of the observer, (which no latent infidelity can effectually stifle or destroy,) that human reason is totally inadequate to *comprehend* Deity from observation of His works, and that nothing short of the Volume of Revealed Truth is able to bring mankind to a satisfactory knowledge of the Creator.

On the subject of the Microscope, and Microscopic Discovery, we refer, *inter alia*, to *Hooke's Micrographia*, *Swammerdam's Hist. Gen. des Insectes*, *Power's Observations*, *Leeuwenhoek's Arcana Naturæ*, *Baker's Microscope made Easy*, *Derham's Physico-Theology*, *Newton's Optics*, *Martin's Philosophia Britannica*, *Sir D. Brewster's Treatise on the Microscope*, *Coddington's Optical Treatises*, *Müller's Animalia Infusoria*, *Ehrenberg's Papers in the Transactions of the Royal Academy of Berlin*, *Pritchard's Natural History of Animalcules*, *Goring and Pritchard's Micrographia and Microscopic Cabinet*, *Pritchard's Microscopic Illustrations*, New and Enlarged Edition, *Pritchard's List of* 2000 *Microscopic Objects*, &c. &c.

MILDERT, WILLIAM VAN, lord bishop of Durham, was the grandson of an Amsterdam merchant, and born in London, in 17[illegible]. He received his education at Merchant-Taylors' school, and at Queen's College, Oxford, where he graduated B.A. 1787, M.A. 1790, B and D.D. 1813. In Trinity term, 1788, he was ordained deacon, on the curacy of Sherbourn and Lewknor, in Oxfordshire. He afterwards became curate of Witham, in Essex; and during his residence at that place he married Jane, daughter of the late general Douglas, who survives him without issue. In April 1[illegible], he was presented by his cousin german and brother-in-law, Cornelius Ives, Esq., to the rectory of Bradden, in Northamptonshire, from which he was removed, at the close of 1796, to the rectory of [illegible] Mary-le-bow, in the city of London. Between the years 1802 and 1805, he preached the lecture founded by the Right Hon. R. Boyle, and discharged that duty with such eminent ability as to attract the general attention of learned men. He soon received a token of public approbation in the vicarage of Farningham, Kent, which was [illegible] upon him in the most flattering manner by [illegible] bishop Sutton. His character, as a profound [illegible] divine, was now fully established; and in [illegible] 1812, he was elected by a large majority of [illegible] benchers to the preachership of Lincoln's Inn. [illegible] September, 1813, he was appointed by lord [illegible]pool to be Regius Professor of Divinity at [illegible] In Lent and Easter terms, 1814, Dr Van [illegible] preached the Bampton Lecture, to which he [illegible] been appointed by the heads of houses before [illegible] became professor. In March, 1819, he was [illegible] bishop of Llandaff, and dean of St Paul's [illegible] following year. He then resigned his [illegible] Oxford, and divided his time between [illegible] Llandaff. In March, 1826, on the death of [illegible] Shute Barrington, he was placed in the [illegible] chair of Durham. He died on the 2[illegible] His publications consist of his "Boyle's [illegible] his "Bampton's Lectures," and two [illegible] sermons preached at Lincoln's Inn. He [illegible] the works of Dr Waterland published at [illegible] 1823, to which he prefixed a life of the author.

MILK (*a*). The subject of the adulteration of milk has been investigated with great care, by M. Barruel of Paris. Although his observations are intended to apply only to the milk of that city, yet there is little doubt that they will also be found applicable in a greater or less degree to all great towns. He sets out with stating that all instruments for ascertaining the purity of milk, which are calculated to attain this end by pointing out differences in its density or specific gravity, are inaccurate and useless. For, on the one hand, pure milk differs much in density according to the fodder used by the dairy-man for his cows, the butyraceous matter, which imparts lowness of density, being made to preponderate by some sorts of food, and the caseous part, which increases the density, being made preponderate by other sorts. And, on the other hand, although water, the ordinary substance with which milk is adulterated by the dealers in the French capital, would alone cause a great diminution of density, the dealers know very well how to prevent that effect, and so render the areometer useless. For this purpose, it is only necessary to dissolve in the milk a little sugar-candy, which is required at all events in order to correct the flat taste imparted to milk by diluting it with water. The result of M. Barruel's inquiries on the adulteration of milk in Paris, is that no positively noxious substance is ever to be found in it; that a common practice is to remove a considerable portion of the cream, by allowing the milk to stand for a limited time, and then to dilute the remainder, or skimmed milk, with water, and to give it the apparent qualities of new milk in one or other of the manners now to be mentioned. The opacity of the milk being much diminished by the water, so that the milk acquired a bluish appearance, it was at one time usual to correct this defect, by previously mixing wheat-flour with the water with which the milk was diluted. But this adulteration was too obvious to the senses. Any person even of indifferent delicacy of palate, could detect the altered taste of the milk; and besides, after two hours' rest, the flour sank to the bottom, restoring the translucent blueness of the milk, and pointing out the nature of the fraud. To prevent this inconvenience, the dealers boiled the flour in the water before mixing it with milk; and in this way an opaque mixture was procured, which retained its opacity on standing. As even with this addition the fabricated liquid had a flat taste, sugar or sugar-candy was dissolved in it, by which means the peculiar sweetness of the milk was partly restored. This adulteration, however, has become so easy of detection by means of iodine, which renders the mixture blue by its action on the fecula of the flour, that M. Barruel believes that the fraud now described is very little practised in the present day in Paris. In Britain, where the municipalities take no charge whatever of the purity of this most important article of food, it may be presumed that the adulteration with flower, sugar, and water is common enough, as it is a simple and cheap mode of accomplishing every purpose of the fraudulent dealer. The best mode of proving the presence of farinaceous matter in such mixture, is to heat the milk with a little sulphuric acid, to coagulate the casein, to filter the whey, and then to add to the latter the tincture of iodine; upon which a fine blue colour will be struck. Driven from this species of adulteration, the Parisian dealers have latterly resorted to another so ingenious, that M. Barruel conceives they could not have discovered it without the aid of some scientific person. The method is simple; so cheap, that for tenpence the opacity and colour of milk may be imparted to thirty English pints of water, and so far secret that no disagreeable taste is communicated. This is nothing more than the employment of an emulsion of almonds, for which some dealers, more greedy and less cautious than the rest, have substituted hemp-seed, which, however, is apt to impart an acrid taste. By either of these means the milk may be diluted to an indefinite extent; and the only corrective required is a little sugar-candy to remove the flat taste. A peculiar advantage possessed by this mode of adulteration over every other, is, that the vegeto-animal matter, or vegetable albumen of the emulsion by which the oil of almond is held in suspension, is coagulated, or curdled, like casein, by acids. The method recommended by M. Barruel for detecting the fraud is founded on two circumstances,—the greatly inferior quantity of coagulum formed by acids in the mixture of milk and almond emulsion, compared with that formed in milk alone, and the facility with which, by kneading the coagulum with the fingers, oil may be squeezed out of the former, while none exists in the latter. On examining carefully four different specimens of pure milk, procured from different quarters in Paris, he found that 300 parts of each coagulated by heating them with an equal volume of vinegar, gave each a quantity of curd, which, when well drained, and equally pressed between folds of bibulous paper, weighed 29 parts; and that the same quantity of milk taken from a cow in presence of a person sent to procure it, gave 30 parts of curd. He then found, that when the same milk was mixed with various proportions of water, the quantity of curd was exactly in the inverse ratio of the proportion of water added. The water, therefore, did not prevent any portion of the curd from being thrown down by the usual modes of curdling the milk. He next found, that, if a given quantity of sugar was added to the mixture of milk and water, the quantity added could be separated exactly by evaporating the whey to the consistence of an extract, heating this with alcohol, filtering the alcoholic solution, and evaporating to dryness. He then also found that, when equal parts of almond emulsion and milk were mixed together, 300 parts of the mixture, curdled by vinegar as above, gave 16½ parts of curd; and that the same quantity of a mixture containing two parts of emulsion to one of milk, gave only 10¾th parts of curd. So that although, as was to be expected, the adulteration with almond emulsion did not lessen the quantity of curd to the same extent as adulteration with water only, yet the decrease was very great, and very nearly in the ratio of the quantity of emulsion added. Lastly, on placing pure curd on white paper, no oily matter was thrown out; but the curd procured from the mixture of milk and almond emulsion, besides being less firm than the former, gave out in twenty-four or forty-eight hours a quantity of oil sufficient to stain the paper. Another adulteration to which milk is subjected in Paris, is with carbonate of potass or soda. The object of this variety of adulteration is, in the hot summer months, to prevent the milk from becoming sour and curdling, or to break down the curd and correct acescency when the milk has actually become spoiled. In this process, acetate of potass or soda is formed. Neither of these salts, in moderate quantity, is injurious to the health; indeed, acetate of potass exists naturally in milk, and is the source of some embarassment in the detection of the present fraud. The mode of analysis adopted by M. Barruel is as follows: As the alkaline acetates are converted by incineration into carbonates, he endeavoured, by means of this property, to ascertain the quantity of alkali naturally contained in whey. He therefore evaporated a certain quantity of whey to dryness, incinerated the residue in a platinum crucible, and procured an alkaline ley from the remainder, which, by the process recommended by Decroisil for measuring the strength of alkaline fluids, indicated from one and a half to two degrees of alkalinity. Hence any increase of alkaline strength above the last of these points, must be considered as owing to the intentional addition of carbonate of potass or soda. This is evidently the most difficult of the processes recommended for detecting the various adulterations specified in M. Barruel s paper. Indeed, a chemist alone could conduct it. The others may be easily executed by any body.

MILL, James; author of the History of British India, and other works, was born in the parish of Logie Pert, Forfarshire, on the 6th April, 1773. He received the early part of his education at the grammar school of Montrose, and was afterwards, through the patronage of Sir John Stuart, Bart, of Fettercairn, on whose estate his father held a small farm, sent to the university of Edinburgh, where he was educated for the church. In 1800, he accompanied Sir John Stuart to London, where he settled, and supported himself entirely by his pen. For several years, he was a contributor to the Edinburgh Review, the British, the Eclectic, and Monthly Reviews. He was also the editor for some time of the Literary Journal, and contributed largely to the Philanthropist, a Quaker periodical. His History of British India was commenced about 1806, and occupied a large portion of his time for a period of ten years. It was published in the winter of 1817—18 in 5 vols. 8vo., and was the first history calculated to convey complete and sound views of India and Anglo-Indian affairs. The knowledge of the subject which the author displayed induced the East India Court of Directors (much to their honour, for he had freely censured many of their transactions) to intrust to him, in 1819, the chief conduct of their correspondence with India in the revenue branch of administration. He afterwards rose to be head of the department in the India House of correspondence with India, or, in other words, chief minister for Indian affairs to the East India company. His official duties, however, did not prevent him from continuing to exercise his pen. He contributed a number of valuable articles to the Supplement to the Encyclopedia Britannica, which were afterwards collected and printed in a separate form. The subjects of the principal of these were on Government, Education, Jurisprudence, Law of Nations, Liberty of the Press, Colonies, and Prison Discipline. In 1821—22, he published his Elements of Political Economy, which professed no higher object than furnishing a clear summary of the leading doctrines of that science. In 1829 he published his Analysis of the Phenomena of the Human Mind, a work upon which he had bestowed extraordinary labour, and at which he evinced great analytical powers. His last work was published in 1835, anonymously, entitled a Fragment on Mackintosh. In this work he criticises Sir James Mackintosh's Dissertation on the History of Ethical Philosophy with great and uncalled for severity. Mr Mill belonged to the Radical party in politics, and wrote many of the principal articles in the Westminster Review. The celebrated articles on the Formation of Opinions in No. XI., and on the Ballot in No. XXV., were by him. He died of consumption on the 23d of June, 1836, and was buried at Kensington, where he had spent the last five years of his life. He left a widow and nine children. In private, he was highly esteemed. His conversation was eloquent and impressive. He was a [illegible] to selfishness. Young men were particularly fond of his society; and it was always to him a source of great delight to have an opportunity of contributing to form their minds and exalt their character.

MIOCENE PERIOD, in geology, means the next to the oldest division of the tertiary strata. It is so called from [illegible], smaller, [illegible], recent, because a small minority only of fossil shells are found imbedded in its formations. Of 1021 shells of this division, only 176 were found to be of recent species, or 18 per cent. The miocene strata are found in Touraine, and in the south of France near Bordeaux, in Piedmont, and in the basin of Vienna and other localities.

MONTGOMERYSHIRE; an inland county of North Wales, of an irregular form, varying in length from twenty-three to forty miles, and in breadth from nineteen to thirty-three miles. Its area is estimated at 839 square miles. It presents great variety of character both in surface and soil. The course of the Severn, through the south-eastern angle of the county, is marked by a vale of fertile and highly cultivated land. To the west and north the surface ascends until it reaches the borders of Merioneth in the Berwyn range, which attains a height of 2037 feet; and to the south-west, on the borders of Cardigan, in the mountain of Plinlimmon, an elevation of 2463 feet above the level of the ocean. The Breddin hills form a striking feature in the general view of the eastern district, and the table-land, occupying so much of the central regions, averages 1000 feet in height above the sea. These hills and highlands are much less picturesque than the Merioneth and Caernarvon mountains, but infinitely more productive, being [illegible] with verdure to their summits. The range [illegible] issues northward from Plinlimmon, is called the Backbone of Montgomery, and here originate [illegible] principal rivers of the county. The rivers [illegible] run westerly from the mountain ridge [illegible] Traeth-back, the Maw, and the Dovey; [illegible] which run eastward are the Wye, the Severn, [illegible] Vyrnwy, and the Tanat, besides minor [illegible]. The Severn and the Dovey are the only [illegible] rivers in the county. A navigable canal, [illegible] menced in 1794, connects the Severn at [illegible] with a branch of the Ellesmere canal at [illegible]. Its length is twenty-seven miles. Montgomeryshire is very scantily supplied with coal and [illegible]. Its principal minerals are copper and lead [illegible] rich lead mine at Talesi formerly yielded [illegible] profits to its owner, Sir Watkins W[illegible] but the working has been discontinued [illegible] the flooding of water. The agriculture [illegible] county is in a backward state: corn and [illegible] the principal articles grown. A considerable [illegible] tion of the land is devoted to pasturage. [illegible] county is well wooded, and the oaks of [illegible] are in high estimation for our dock-yards. The chief manufactures are those of woollens, made from the fleeces of native sheep, and consisting mostly of flannels. Farmers and cottagers make these flannels, and they are collected by a sort of middlemen, who bring them to the market at Welshpool, whence they are distributed throughout the kingdom under the name of Welsh flannels. The borough and market-towns of Montgomeryshire are, Montgomery (population of parish, 1188); Machynlleth (population, 2381); Newtown, (population, 4550); Welshpool (population, 4533); Llanedloes (population, 4189); Llanfyllen (population, 1836); and Llanfair (population, 2687.) The county-jail and house of correction are at Montgomery, where the quarter sessions are held. The assizes are held in the spring at Welshpool; in the winter at Newtown. The county returns one member to parliament; the boroughs another. Population of the county in 1831, 66,482.

MONTROSE; (called provincially *Monross*, supposed from the Gaelic *Moinh*, back, and *Ross*, promontory,) an ancient royal burgh and seaport town of Scotland, in the county of Forfar, distant from Edinburgh seventy and from Dundee thirty miles north-east. It is situated on a peninsula formed by the German ocean on the east, the South Esk river on the south, and by a large expanse of this river, called the Basin of Montrose, on the west. The basin is nearly dry at Low water, but during high water it presents the appearance of a vast lake, surrounded by numerous country seats, and finely cultivated fields, and forming altogether a very attractive scene. The town is well built, and consists chiefly of one spacious main street, from which smaller streets diverge. Among the public edifices are, the town-house, a neat building, with an arcade below, and rooms for public business over it; the old parish church, to which a tower, surmounted by a spire, was attached in 1835, said to form the highest steeple in Scotland; St John's church, made a parish church in 1835; St Peter's Episcopal chapel in the Links, founded n 1722; the Lunatic asylum, erected in 1780, and onsidered one of the best institutions of the kind n Scotland; the Academy, erected in 1814; a pacious seminary erected in 1832, and a commodious new-jail erected in 1833. In 1828-9, a magnificent suspension-bridge, 432 feet in length, was hrown across the South Esk, designed by captain Samuel Brown, R. N., and finished at an expense f £20,000. The harbour on the east side of the ridge is commodious, and furnished with good ays. It is a port of the custom-house, and includes the havens and creeks from Bervie Brow to e Tay. Two light-houses, with fixed lights, ere erected on the north side of the river in 1818, y which vessels are enabled at night to make the rbour with safety. The number of vessels belonging to the port amounted in 1837 to 105, registering about 11,050 tons. Most of these are gaged in the importation of flax from the Baltic, d a number in bringing coal from Newcastle and underland. The export trade consists chiefly of ain, cured salmon, herring, and cod. The manufactured goods are sent coastwise to London, Glasgow, *Dundee*, &c. A large steamer now sails gularly between Montrose and London. The incipal manufactories of the town are those of l-cloth, sheeting, and linen, with which are connected several flax spinning-mills. Ship-building arried on to some extent. Montrose abounds in benevolent and charitable institutions, and in associations for religious, literary and scientific purposes. Between the town and the sea, there are extensive links or downs, where the game of golf is played, and where horse races used occasionally to take place. A small neat theatre, opened for the amusement of the inhabitants, has been of late years converted into dwelling houses. The town is lighted with gas, and abundantly supplied with water, brought in pipes from a distance of three miles. Montrose unites with Forfar, Brechin, Arbroath, and Bervie, in sending a member to parliament. The population of the *parish* of Montrose, which extends about three miles on either side, was in 1831, 12,055; of the burgh, 11,500. James Graham, the celebrated marquis of Montrose, was born in the burgh in 1612. Andrew Melville, the father of Presbytery in Scotland, was born in the neighbourhood, and received the early part of his education at Montrose.

MORGAN, WILLIAM, F. R. S., actuary of the society for equitable assurances on lives and survivorships, was born at Bridgend, in Glamorganshire, on the 6th of June, 1750; and educated for his father's profession, which was that of medicine. By the kind assistance of his maternal uncle, Dr Price, he was enabled to enter as a student at Guy's and St Thomas's hospitals. There he continued for three or four years, pursuing his medical studies with great zeal, industry, and success. In 1770, Dr Price published the first edition of his work on "Reversionary Payments, on Schemes for providing Annuities for Widows and for Persons in Old Age, and on the method of calculating the Value of Assurances on Lives." This caused Dr Price to be consulted by many societies instituted for these purposes, as well as in cases for the valuation of individual reversionary interests; and he suggested to his nephew, that it might possibly be of advantage to him to turn his attention to these subjects. He accordingly commenced the study of mathematics about this time (1772), and made an extraordinary and rapid progress in them. In February, 1774, he was, at the recommendation of Dr Price, appointed to the office of assistant actuary to the equitable society; and succeeded to the more important office of actuary, in February, 1775, the president and directors of which society had frequently consulted Dr Price on the management of their affairs. Here he had an opportunity of following the peculiar bent of his genius, and he pursued his mathematical studies with great ardour and an enthusiastic love of science. In the year 1779, he published the first edition of his work on the Doctrine of Annuities and reversionary Payments, containing rules for solving all questions concerning the value of annuities and reversions depending on any one, two or three lives, or on any survivorships among them, most of which had never before been answered. These solutions were all derived from the hypothesis of De Moivre. In 1781, he published an Examination of Dr Crawford's Theory of Heat and Combustion (the first edition). In 1788, he communicated, through Dr Price, his first paper to the royal society, namely, on the Probabilities of Survivorships between two Persons of any given age, and the method of determining the Value of Reversions depending on those Survivorships (from tables of the real probabilities of life: this had never been done before). For this paper the president and council adjudged to him the gold medal on Sir Godfrey Copley's donation, and he was shortly afterwards elected a Fellow. In 1783, he communicated a paper on the Method of determining, from the REAL Probabilities of Life, the Value of a Contingent Reversion in which *three Lives* are involved in the Survivorship. In 1791, another paper on the same subject. In 1794, a further investigation of the same. These papers comprised the solution of seventeen different problems; and, in 1799, he communicated the solution of seven more problems in which three lives are involved, in all of which were also involved a contingency never before accurately determined, *namely*, that of one life failing after another in a given time. These problems may be said to have exhausted the subject so far as it relates to contingencies on three lives. The whole of these papers he afterwards revised and republished in the second edition of his work on the Doctrine of Annuities, 1821. He also communicated to the royal society a paper on the Non-conducting power of a Vacuum. He also published the following pamphlets:—In 1792, "A Review of Dr Price's Writings on the Subjects of the Finances," &c. In 1796, "Facts addressed to the serious Attention of the People of Great Britain," followed by "Additional Facts." In 1797, "An appeal to the People of Great Britain on the alarming State of the Public Finances." In 1803, "A Comparative View of the Public Finances from the beginning to the close of the late Administration." In Rees's Cyclopædia, he wrote on Life Annuities, Chance, Funds, Interest.

Mr Morgan's services, in connection with the Equitable Society, were of great public importance and utility. The Equitable Society was founded in 1762, and although, in some respects, it proceeded on more scientific principles than any society which had been previously established, possessed but little claim to its title. Mr Morgan was the first to give a perspicuous explanation of the general principles of life assurance. By his ability, integrity, and wisdom he guided this institution from one step of prosperity to another, and raised it from comparative insignificance, consisting, at the time of his appointment, in 1774, of about 700 members, with a capital of only £33,800 stock in the three per cents., under regulations which must ever have retained it in a state of infancy and weakness, to its present magnitude and importance, consisting of many thousand members, and possessed, in 1829, of a capital exceeding £9,000,000, an income of nearly £800,000 per annum, and engaged in assurances for the most part intended as a provision for the surviving families of its members, to the amount of upwards of £19,000,000.

Mr Morgan's decease took place at Stamford Hill, Middlesex, on the 4th of May, 1833, in the eighty-third year of his age. He was a protestant dissenter of the Unitarian school.

MORPETH; a town of Northumberland, situated by the river Wansbeck on the line of the great road from Edinburgh to London, about fourteen miles north of Newcastle-upon-Tyne. The town is of remote antiquity, and consists principally of two streets, in the centre of which is the market-place. The new county gaol, house of correction, court-house, &c., is a fine pile of buildings, erected in 1829, on the south side of the river. The town-house was erected in 1714, at the expense of the earl of Carlisle, in which the manorial court is held, as well as the quarter sessions for the county; it is built of hewn stone, having a piazza ornamented with rustic work, and the superstructure decorated with turrets. The ruins of the ancient castle of Morpeth are situated on an eminence, and consist only of some fragments of the outer wall, and part of the gateway tower. at a short distance from this tower is a small mound of earth, raised to a considerable height, probably for the purpose of blockading the fort, which appears to have been of great strength. The largest cattle-market in the north of England is held here weekly, and the whole of the counties of Northumberland and Durham are supplied with cattle from it. By far the larger portion of the cattle sold here are brought from the northern districts of Scotland. Hodgson, the historian of Northumberland, says, "The privilege of holding a weekly market here on Wednesday was first granted to Roger de Merlay the second, by king John, in 1199. The great cattle-market held here weekly on that day, probably grew, with the trade on the Tyne and Wear, from very small beginnings to its present consequence. [illegible] persons were fined at the Manor court, at [illegible] 1656, for having sheep-pens considerably before their doors." From the 13th of February, [illegible] (when the new bridge built across the river Wansbeck, at the southern approach to the town of Morpeth, was opened,) to the 10th of February, 1833, the gross number which passed along the bridge (at which a toll is taken) was [illegible] cattle, and 189,091 sheep, &c.; but although by far the greatest number of the cattle sold here pass along this bridge, this gives but an imperfect idea of the actual number sold, and does not include those which go in other directions. The market is held on Wednesday, and the number of persons in the habit of attending it is very great, and composed for the most part of butchers, farmers, [illegible] graziers, and jobbers, or cattle-dealers. [illegible] o'clock, on the Tuesday evening, the preparations for the ensuing day's market begin by persons putting up the sheep-pens; and at the earliest hour of the following day the market commences. The scene of confusion which the town presents on the mornings of Wednesday can scarcely be imagined. The narrow street in which the market is principally held is lined on either side with sheep-pens, and the intermediate space is crowded with [illegible] cattle, carriages, and all manner of persons. Morpeth formerly returned two members to parliament: by the reform bill, it returns only one. Population in 1831; of the town, [illegible]; of the parish, which includes seven other townships, 4797.

MORRISON, Robert, D.D., F.R.S., M.R.A.S., an eminent Chinese scholar and [illegible] born at Morpeth, 5th Jan. 1782. [illegible] a last and boot-tree maker, was a native of [illegible] shire, and he himself was brought up in the Presbyterian persuasion. In 1803, he was admitted as a student or probationer into the [illegible] academy at Hoxton. There he continued [illegible] May 28th, 1804, when he was accepted as a missionary, and was received under the patronage of the London Missionary Society, who sent him to their seminary at Gosport, to be educated for their service, under the superintendence of the Rev. David Bogue. He returned to London in the summer of 1806; and, having chosen China as the field of his missionary labours, he, the better to qualify himself for them, obtained the [illegible] as a preceptor, of a young Chinese, named Yong-Sam Tae, by whose assistance, and with the practice he acquired in forming the Chinese character by transcribing a Chinese MS. of the four Gospels in the British Museum, and another the property of the royal society, he made considerable progress in qualifying himself for his undertaking. On the 8th of January, 1807, he was formally set apart, or ordained, according to the practice of the church of Scotland, in the Scottish church in Swallow Street, to the work of a Christian missionary among the Chinese; and on the 31st he embarked for China, *via* America, and landed at Macao on the 4th of September, 1807. On his arrival at that place, he continued to prosecute the study of the Chinese language. In 1808, he was appointed translator to the East India Company's factory at Canton, and about the close of the year he informed the Missionary Society that he had completed a grammar of the Chinese language; that his dictionary of the same language was daily filling up, and that his MS. of the New Testament was in part fit to be printed. In 1813, he completed an edition in Chinese of the whole of the New Testament, of which he forwarded a few copies to Europe as presents to his friends. Large impressions of this Testament have since been printed: they bear date in the years 1815, 1819, 1822, and 1827, and were extensively circulated in China. He at the same time wrote and printed a Catechism in Chinese, with a tract on the Doctrines of Christianity, of which 15,000 copies were printed and circulated. In 1815, he commenced the publication of his Dictionary of the Chinese Language. This work was printed at a press established expressly for that purpose at Macao. It consists of three parts:—the first part containing the Chinese and English, arranged according to the radicals, fills three quarto volumes of about 900 pages each, bearing date 1815, 1822, and 1823. It was by this systematical arrangement of the elements of the Chinese language that Morrison surmounted a difficulty, which had till then been found insuperable by Europeans, in their endeavours to understand the speech and writings of the natives of this immense empire. The second part, which fills two volumes, published in the ears 1819 and 1820, contains the Chinese and English arranged alphabetically; the third part, ublished in the year 1822, consists of English words with Chinese meanings. The Dictionary was completed on the 15th of April, 1822. The ost, which amounted to £15,000, was defrayed y the East India Company. After he had completed his translation of the New Testament, in 813, he obtained the co-operation of the Rev. Mr ilne, who had been sent to Malacca by the ondon Missionary Society, in charge of their issionary establishment at that place. With Mr ilne, whose life fell a sacrifice to the climate in e year 1822, Dr Morrison maintained a constant d cordial friendship, and with his assistance he mpleted a Chinese version of the books of the ld Testament on the 25th of November, 1819. he portion of this work which was translated by r Milne consists of the book of Deuteronomy, d later historical books, and the book of Job. he translation and publication of the whole of e Old and New Testaments, in nineteen volumes octavo, was completed in the year 1819. eang-a-fă, a native Chinese, who had been converted to the Christian faith by Dr Milne, assisted in passing the work through the press. Other editions of this work have been printed since the year 1819, at the expense of the British and Foreign Bible Society; and Dr Morrison meditated, and, indeed, had undertaken, previous to his decease, a new and revised edition of the Sacred Scriptures in Chinese, under the patronage of the Bible Society. In 1817, he published a "View of China for Philological Purposes," in one volume quarto, containing a sketch of Chinese chronology, geography, government, religion, and customs, designed for the use of persons who study the Chinese language. This volume contains an outline of the Chinese dynasties, with many historical facts, of which more recent writers on China have not failed abundantly to avail themselves. In the same year, his extensive acquaintance with the language and literature of China recommended him as the fittest person to accompany lord Amherst on his embassy to Pekin. Dr Morrison, accordingly, accompanied his lordship as his Chinese interpreter; and wrote a memoir of the embassy, which was afterwards published in this country. On the 24th of December, 1817, the Senatus Academicus of the university of Glasgow unanimously conferred upon him the degree of doctor of divinity, in token of their approbation of his philological labours. In 1818, he executed a project, which he had long had in contemplation—the establishment of an Anglo-Chinese college at Malacca, in which the languages and literature of the two countries should be interchangeably communicated, chiefly with a view to the final object of his mission, the introduction of the Christian religion into China. Towards the foundation of this college he gave £1000 with an endowment of £100 per annum for five years; and obtained the further requisite pecuniary aid from his friends in Europe and Asia. He made other pecuniary grants towards the support of this institution, and was, till his death, its most powerful and efficient patron.

In 1824, he returned to Europe, and was received with marked attention in the several religious, literary, and scientific circles in England and Scotland, in which he made his appearance; and not less so in the French metropolis, where he spent part of the summer of 1825. He had also the honour, during his residence in England, to be enrolled a member of the royal society; and was presented, as one of the most eminent Chinese scholars of the age, by the president of the Board of Control, to the King at his levee, to whom he submitted a complete copy of the Sacred Scriptures in the Chinese language, together with some other productions of the Chinese press. He brought with him to England his Chinese library, consisting of several thousand volumes in every department of Chinese literature. During his residence in England, he published a thin quarto volume entitled the "Chinese Miscellany," consisting of original extracts from Chinese authors, in the native character; with translations and philological remarks. In the publication of this work, he had recourse to lithography,—an art which he subsequently described as peculiarly well adapted to the multiplication of copies of pages written in the Chinese character, and which for that reason he has introduced into China. In 1826 he returned to China, under the auspices of the court of directors of the East India Company. On the arrival of lord Napier at Macao, with his majesty's commission, constituting the new arrangement for the administration of the British affairs in China, he found Dr Morrison there; and, in pursuance of instructions received from our government, appointed him Chinese secretary and interpreter to the commission. Dr Morrison was then, and had been for some time, in declining health; he, nevertheless, consented to accompany his lordship, on his resolving to proceed immediately to Canton, and was with him, in an open boat and in a storm of rain, on the Canton river, in the night between the 24th and 25th of July, 1834. The party did not arrive at Canton till the morning of the 25th. From that time, disease made rapid advances, and he expired in the fifty-third year of his age, on the evening of the 1st of August, in the arms of his eldest son, John Robert Morrison. This gentleman was appointed his father's successor in the duties of his offices. The following is a list of publications by Dr Morrison which have not been already noticed. 1. A Tract, printed in China, in Chinese, entitled A Voyage round the World, illustrative of the Manners and Religious Opinions of Christians. 2. A translation into Chinese of The Morning and Evening Prayers of the English Church; with the Psalter, divided into Portions to be read daily. 3. A translation into Chinese of the two first Homilies of the English Church. 4. Introduction to the reading of the Sacred Scriptures, in Chinese, with Chronological, Historical, and Literary Notices, and a System of Reference to Books, Chapters, and Verses. 5. Epitome of Church History and Prophecy. 6. The Devotional Times, Forms, &c., of the Protestant Church. 7. Aids to Devotion, taken from the English Liturgy. 8. Prayers and Hymns, in Chinese, 1833. 9. A work on the First Epistle of St Peter. 10. Dialogues and Detached Sentences in the Chinese Language; with free and verbal Translations. 11. China; a Dialogue for the Use of Schools. 12. Hints on Missions. 13. Religious Tracts, addressed to Sailors. 14. A Sermon preached at Whampoa, 1833; printed in London. 15. A Volume of Sermons in English.

MURRAY, ALEXANDER; a distinguished linguist, was born at Dunkitterick, in the parish of Minnigaff, stewartry of Kirkcudbright, on the 22d October, 1775. His ancestors for several generations were humble Galloway shepherds. His father's whole property consisted only of two or three scores of sheep, and four muirlands cows. "He had no debts," says his son, "and no money." As all his other sons were shepherds, it was with him a matter of course that Alexander should be brought up to the same employment; and accordingly, as soon as he had strength for any thing, that is, when he was about seven or eight years of age, he was sent to the hills with the sheep. However, from the first he gave no promise of making a good shepherd, and he was often blamed by his father as lazy and useless. The truth is, he was not stout, and was likewise short-sighted, which his father did not know. Besides, "I was sedentary," says he, "indolent, and given to books, and writing on boards with coals." But his father was too poor to send him to school, his attendance upon which, indeed, would have been scarcely practicable, unless he could have been boarded in the village, from which their cottage, situated in a wild and sequestered glen, was five or six miles distant. About this time, however, (in May, 1784,) a brother of his mother's, who had made a little money came to pay them a visit; and hearing accounts of the genius of his nephew, offered to be at the expense of boarding him for a short time in New Galloway, and keeping him at school there. His attendance at school, however, had scarcely lasted for three months, when he fell into bad health, and he was obliged to return home. For nearly five years after this he was left again to be his own instructor, with no assistance whatever from any one. As soon as he became sufficiently well he was put to his old employment of assisting the rest of the family as a shepherd boy. "I was still," he says, however, "attached to reading, printing of words, and getting by heart ballads, of which I procured several. About this time, and for years after, I spent every sixpence that friends or strangers gave me, on ballads and penny histories. I carried bundles of these in my pockets, and read them when sent to look for cattle on the banks of Loch Greanoch, and on the wild hills in the neighbourhood." And thus passed away about five years of his life. All this time the bible and these ballads seem to have formed almost his only reading; yet even with this scanty library he contrived to acquire among the simple inhabitants of the glen a reputation for unrivalled erudition. He was now twelve years of age; and as there seemed to be no likelihood that he would ever be able to gain his bread as a shepherd, his parents were probably anxious that he should attempt something in some other way to help to maintain himself. Accordingly, in the latter part of the year 1787, he engaged as teacher in the families of two of the neighbouring farmers; for his services in which capacity throughout the winter, he was remunerated with the sum of sixteen shillings. He had probably, however, his board free in addition to his wages, of which he immediately laid out a part in the purchase of books. In 1790, he attended school during the summer for about three months and a half. It seems to have been about this time that his taste for learning foreign languages first began to develope itself, having been excited, as he tells us, by his study of "Salmon's Geography." The following summer, that of the year 1791, was spent by him still more laboriously than any of the preceding; and the advancement he made is a surprising evidence of what diligence may accomplish. He again attended school for about three months, and, in addition to the tasks of the school, he read with avidity by himself whatever books in English, Latin, or Greek, he could any where borrow. He in fact actually made himself familiar, and that chiefly by his own unassisted exertions, with the French, Latin, Greek, and Hebrew languages, and perused several of the principal authors in all of them, within about a year and a half from the time when they were all entirely unknown to him; for it was at the end of May, 1790, that he commenced the study of French; and all this work had been done by the end of November in the year following. There is not, perhaps, on record a more extraordinary instance of youthful ardour and perseverance. He was again engaged in teaching during the winter, and received, as he states, for his labours about thirty-five or forty shillings. "Meanwhile, however, he says, "as usual, every spare hour was given to study. French, Latin, Greek, and Hebrew, occupied all my leisure time." In the summer of 1792, he returned to school for the last time, and remained for about three months and a half. He different periods of his school attendance, added together, make about thirteen months, scattered over the space of nearly eight years. About this time, he made himself acquainted with the Abyssinian alphabet, from an inaccurate copy of it which he found in an odd volume of the Universal History. The Arabic letters he had learned before, from Robertson's Hebrew Grammar.

In 1794, he was induced to visit Edinburgh, and, chiefly through the instrumentality of Mr James Kinnear, printer in the king's printing-office, he was introduced to the late principal Baird. He was examined by the principal and several professors of the university, and so surprised them by the extent and accuracy of his acquaintance with French, Latin, Greek, and Hebrew, that measures were immediately taken for having the classes thrown open to him, and his maintenance secured while attending them. For the next ten or twelve years of his life he resided principally in Edinburgh. During that time, beside passing through the course of education necessary to qualify him for the ministry of the Scottish church, he continued to devote himself with all his old enthusiasm to the study of languages, in which he was so admirably qualified to excel. No man that ever lived, probably, not excepting Sir William Jones himself, prosecuted this branch of learning to such an extent as Murray. By the end of his short life, scarcely one of either the oriental or the northern tongues remained uninvestigated by him, in so far as it was possible to acquire the knowledge of it from sources then accessible in this country. Of the six or seven dialects of the Abyssinian or Ethiopic language in particular, he had made himself certainly much more completely master than any European had ever been before; and this led to his being selected by the booksellers n 1802 to prepare a new edition of Bruce's Travels, which appeared in seven volumes octavo three ears after, and at once placed him in the first rank of the oriental scholars of the age. In 1806 he eft Edinburgh, in order to officiate as clergyman n the parish of Urr in Dumfriesshire. And here e remained pursuing his favourite studies for six ears. In 1812 the professorship of oriental languages in the university of Edinburgh became acant; and Mr Murray's friends immediately eized the opportunity of endeavouring to obtain r him the situation of all others which he seemed pecially formed and endowed to fill. A multitude of testimonials of his qualifications for the acant chair, were published, as honourable as ever ere given to any candidate, whether we look to e decided terms in which they were expressed, r to the authority of the writers.* One was from e late Mr Salt, one of the most distinguished of odern orientalists. "My acquaintance with Mr urray," says he, "originated in my admiration of e deep erudition and extensive research displayed in his edition of Mr Bruce's travels in byssinia. Having twice visited that country, I s led to pay particular attention to its history d literature, and in these pursuits I received so uch assistance from Mr Murray's labours that I ok an early opportunity, on my return to England in February, 1811, from the mission to Abyssinia in which I had been engaged, to recommend n to the marquis Wellesley *as the only person in British dominions*, in my opinion, adequate to anslate an Ethiopic letter which I had brought m Ras Willida Selasé, addressed to the king. My recommendation was attended to, and Mr Murray finished the translation in the most satisfactory way."* He was elected on the 8th of July by a majority of two votes; and a few days after, the senate of the university unanimously passed a vote of thanks to Dr Baird for bringing his pretensions before the patrons, conferring, at the same time, the degree of doctor of divinity upon their new associate. But all these honours came only to make the setting of the luminary more bright. On the 31st of October, Dr Murray entered upon the discharge of his public duties, in a weak state of health, but with an ardour in which all weakness was forgotten. Although declining in strength every day, he continued to teach his classes during the winter, persevering in the preparation and delivery of a course of most learned lectures on oriental literature, which were attended by crowded and admiring audiences; and even carrying an elementary work through the press for the use of his students. A new impression of his edition of Bruce's Travels also appeared in the beginning of February. Engaged in these labours, he could not be persuaded that he was so ill as he really was; and when Mrs Murray, who had been left behind him at Urr, urged him to permit her to come to town, it was with difficulty that he was at last brought to consent to her joining him on the 16th of April. Fortunately, her affection and her fears impelled her to set out on her journey a few days earlier than the appointed time, and she arrived in Edinburgh on the 13th. She found her husband surrounded by his books and papers, and even engaged in dictating to an amanuensis. But life was now ebbing rapidly. He retired that evening to the bed from which he never rose; and before the close of another day he was among the dead. He died on the 15th April, 1813, in his thirty-eighth year. If he had lived longer, he would probably have reared for himself many trophies, and extended the bounds of human learning. His ambition had always been to perform in the field to which he more especially dedicated his powers, something worthy of remembrance; and his latter years had been given to the composition of a work—(his History of European Languages)—which, if time had been allowed to finish it, would unquestionably have formed a splendid monument of his ingenuity and learning. It was published after his death, in so far as it could be recovered from his manuscripts, (1823, 2 vols. 8vo) under the auspices of Sir Henry Moncrieff and Dr Scot of Corstorphine; and although, probably, very far from what it would have been had he lived to arrange and complete it, is still a wonderful display of erudition, and an important contribution to philological literature.

MUSIC, (*a*.) The earliest music on record is the song of Moses and the Israelites after the passage of the Red sea, when Miriam took a timbrel in her hand, and answered them. "And all the women went out after her with timbrels and dances." Here it may be observed, that the instrument, whatever it was, that is called *timbrel*, was used merely as an accompaniment to the voice, or, it may be, to the dance. And this is true of nearly all the instrumental music of those times called ancient. It was, for the most part, little more than an accompaniment to the voice, generally following it very exactly in its modulation and its time. Still the power of music could not have been slight or unimportant; for it is not merely, nor principally, by the pleasure it affords the ear, that it produces its effects; but by the natural expression of emotion or passion, thus appealing to and exciting feelings which may be of the most intense energy. Such effects may be produced by music of a simple character, as well as by that of a complicated and scientific kind. Expression can be given to the wild war-hoop of the Indian, as well as to the elaborate composition of the European; and expression never fails to excite a corresponding emotion in the breast of the auditor. In speaking and thinking, therefore, of the strange and astonishing effects ascribed to ancient music, which, after all due allowance for poetic exaggeration, will still remain very great, it should be constantly borne in mind, that these effects are due, not to scientific combinations of sound, but to natural strong expression, which exercises its sympathetic power in proportion to its naturalness, rather than its abstract science. It is, indeed, the aim of all true science in music to give to those studied combinations which please the cultivated musical intellect, that various and true expression which is able to touch the heart of every hearer, whether skilled or not in the charming art. Nothing is so barren, so tedious, so utterly vexatious, as a long, laboured, scientific piece of harmony, in which expression is either wanting or indistinct. It is addressed, not to a mixed audience, but to the scientific composer only, who alone can appreciate the great difficulties conquered, or the immense labour bestowed; and one might as well attempt to please an assembly by a dissertation on the differential calculus, intelligible to the mathematician only, as by such a musical composition.

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* After Dr Murray's death, a pension of £80 a year was bestowed upon his widow by the king, in remembrance of his services on this occasion.

This fact seems to have been lost sight of in the interminable discussions which have taken place respecting the musical attainments of the ancients. It has been inferred from the extraordinary stories which have come down to us of its effects, that it must have been very elaborate, scientific, and skilfully complicated; and, on the other hand, it has been inferred, from the obvious, acknowledged simplicity of the instruments in use, and the seeming imperfection of the ancient scale, with the uncertainty respecting the means of combination of sounds then understood, that all those stories were mere fables, absolute inventions of the fathers of history and poetry. Neither inference is necessary; and if it be recollected that the effect of music does not depend upon its scientific arrangement, so much as on its expressive simplicity, the accounts of its effects, however wonderful, may be easily reconciled with the comparative rudeness of the instruments by the aid of which those effects were produced. It may be remarked, too, that one instrument was then in use, which, there is no reason to doubt, was as perfect as it is at the present moment; capable of producing the same thrilling tones, the same touching cadences, the same variety, strength, and delicacy of expression. That these powers should have lain dormant among people of luxurious tastes and intellectual refinement, is altogether incredible, whatever may have been the artificial divisions of the gamut, or however imperfect the means of recording the tones of the human voice.

There was a long period, however, in the history of the world, when luxury and refinement did not exist; and when, without doubt, music was in the same imperfect and rude state as the other arts of life. It is certain, that no very rich combinations of harmony could have been made by those who were acquainted with no other instrument than the timbrel, just mentioned, and the trumpet. Moses, who had been carefully trained in all the learning of the Egyptians, in which music was deemed worthy to hold a place, caused two silver trumpets to be made "for the calling of the assembly, and for the journeying of the camps;" and no other instrument of music is mentioned throughout the history of the Hebrew legislator. It would be rash to infer that nothing else was known, at that period, to the Egyptians; for the condition of the Israelites scarcely permitted them to give much attention to the superfluities of life, and, though it is impossible to fix the date of their invention, it is well known that several other instruments were in use among the ancient inhabitants of Egypt. The lyre, the pipe, the kettle-drum, and the sistrum are reckoned by Burgh the only instruments of that people; but to these must be added the trumpet and timbrel, as it is scarcely probable that Moses invented them, and an instrument of two strings, somewhat resembling the mandolin in shape and size, described by Dr Burney from a figure on an ancient obelisk. It is known, too, that the learned men of Egypt early made profound mathematical calculations respecting the proportions of sounds, a study implying some acquaintance with the vibrations of musical strings; but, as historians in those days were less careful than writers of a later time to fix the dates of events, it is impossible to speak with the desirable precision of the order of invention of musical instruments, as well as of many other things still more important. All we can do is to observe, that at certain periods progress in the art is perceptible, and the most thorough investigation could lead to nothing more than a conjecture as to the year or even the century of an invention.

From the time of Moses no mention of music is made, in the history of the Hebrews, till the reign of Saul; with the exceptions of the song of Deborah and Barak, which does not appear to have been accompanied by instruments; and the timbrel of the unhappy daughter of Jephthah, who went to meet her more unhappy father "with [illegible] with dances." In the hands of David we [illegible] hear of the harp, and in the use which he [illegible] we find perhaps an early instance of the [illegible] being played independently, and not simply [illegible] companiment to the voice and the poetry, [illegible] to have constituted a principal part of the [illegible] ancient music. We find, too, a striking [illegible] in the effect produced by the minstrelsy of the [illegible] brew shepherd boy, and that of our own [illegible] rary music; a resemblance which [illegible] the human heart had the same feelings and [illegible] tions then as now, the music which [illegible] effects cannot be very dissimilar in [illegible] "And it came to pass, when the evil [illegible] God was upon Saul, that David took [illegible] played with his hand: so Saul was [illegible] was well, and the evil spirit departed [illegible] How many a melancholy spirit has [illegible] how many a sorrowing heart has been [illegible] the irresistible charm of music in later days [illegible] it has often occurred to us that the [illegible] which, like Saul's, amounts almost to [illegible] might be chased from the soul, and gently [illegible] ated, if not wholly cured, by the skill of the "cunning player," or the voice "of the well-instructed in song."

The musical taste and talent of David were not unemployed during his whole reign. He composed, and encouraged others to compose those Psalms, which from the day they were written have been held in the highest esteem, as the most beautiful specimens of devotional poetry existing in the literature of any people. The poets of antiquity were always musicians, and there is no reason to doubt that David himself prepared the music as well as the verse of his own sacred songs. Another very probable occupation may have been superintending the musical education of those who were training for the splendid service of the future temple; for it appears, that in his old age, when he had resigned the kingdom to Solomon, the number of the singers set apart for this service was two hundred and eighty-eight, and the number of the Levites taught to play upon instruments made by David himself was four thousand. This is the first conservatorio of which we have a distinct record; and we cannot hold it in light esteem, when we observe that David himself prepared the poetry, the music, and the instruments, that it was constantly under the eye of the king, and that it was intended as an academy for the education of those who were to officiate in the highest and most interesting service known to the nation, the service of the temple. What those instruments were that were invented by David, or which were in use in his day, it is now in vain to inquire. Nothing is left, from which even a probable conjecture can be formed. All we know is, that they were of various sorts, of both wind and stringed instruments, the names of which have been translated, to be sure, into various languages, but, so far as we are concerned, might as well have been left in the original Hebrew.* The lute, the pipe, the timbrel, the trumpet, the horn, are English words certainly, as well as the harp, the cymbal, the drum, and the organ, but they may, and probably do, stand for things very different in character from David's instruments; while it would be difficult for a mere English scholar to give a definite idea of what is meant by a psaltery, a shawm, or a sackbut. Here are already twelve instruments, and it seems not improbable that others are intended by the words *neginoth*, *gittith*, *sheminith*, *&c.*, which occur in the titles of the Psalms, and which have been a sad stumblingblock to the learned commentators, who would have been satisfied, could they but have fallen upon an English name, with some degree of plausibility. At all events, we may feel some confidence in the assertion, that the accompaniment of instruments to Hebrew music possessed considerable richness. And, if we believe what is stated in the first book of Chronicles, that the singers "were employed in that work day and night," we can have little doubt of their accomplished skill.

The reign of Solomon was pre-eminent, in the history of the Jews, for every thing which elevated them in the relative rank of nations. Their subsequent intestine divisions, and subjugation to a foreign yoke, prevented them from retaining the taste for music, which had flourished in the days of their national prosperity; and we hear no more of their skill in the art, or their fondness for its practice. The only other nation, whose music can be traced back to so high an antiquity as that of the Jews, is the Egyptian; but, in ascending to so remote a date, we are lost in a cloud of uncertainty, which rapidly gathers into the night of total ignorance. It is but stating the truth to say, that the amount of our knowledge respecting it is, that the Egyptians had some kind of music, and some kinds of musical instruments, though what they were it is impossible to determine; that music was much studied and held in honour among them, and that from them was derived much which was afterwards known and practised in Greece.

It is in the music of Greece and Italy, that we are naturally more interested than in that of any other of the people of antiquity, on several accounts. The Greeks were more refined in various ways, than any other nation, and we know more of their character, history, and habits. Their literature is more familiar to us; and though all that we know of their music amounts to but little, yet even that little is unknown with respect to the music of all other civilized inhabitants of the ancient world. It is extremely difficult to rescue that which may seem probable, in relation to ancient music, from the almost unintelligible jargon by which it is covered up, by writers who have interpreted ancient authors according to a preconceived theory of their own, or who have undertaken to translate musical terms without either knowledge of the art, or respect for its theory, and have overlaid with a mass of perplexing erudition a subject already sufficiently involved in obscurity. We shall endeavour carefully to separate what is known and certain, from what is unknown or doubtful, and to distinguish, as clearly as may be practicable, between the probable and the improbable.

The first fact, which is undisputed on all hands, is the intimate connection existing between the poetry in all its forms, the eloquence, and the music of the ancients. Their poets sang their own compositions, their orators were attended by musicians with instruments to give them the pitch of their voice, and their dramas were sung as well as acted. It has been asserted that they had no music unconnected with the voice, though one can scarcely imagine an assertion more entirely gratuitous. The mention of instrumental music is, to be sure, rare among the authors to whom we must recur for information on the subject; but let us suppose for a moment an age of barbarism to supervene on the present state of the world, and all existing literature and art to be blotted out, and then recovered again as those of the Greeks have been. It would not be very difficult, one would think, to frame a theory with respect to modern music, which should exclude instruments, except as an accompaniment to the voice, if no writings of a professed musician should happen to be recovered from the common destruction. In works of general literature, music is rarely described in such a way as to give precise and accurate ideas of its character; and, though the shapes assumed by literature in modern times are so much more various, though we have tours, letters, dictionaries, and a thousand other productions which the Greeks had not, yet we can easily conceive of an Australian antiquary, some two thousand years hence, asserting with the confidence to which his researches may entitle him, that the instrumental music of the ancient Europeans, and their less cultivated descendants in America, was merely used as an accompaniment to the voice; that part of their religious worship was the singing of psalms accompanied by the organ; that in their social meetings the piano accompanied the song, and at their theatres the whole object of the orchestra, composed as it was of all the instruments then known, was to sustain the voice of the singer, and fill up the short pauses required by the meaning of the words; indeed, that the only use that can be discovered of instrumental music independently of the voice, was to regulate the step of a procession or of a military corps. This sounds absurdly enough, and we should say that our Australian descendant might give us a little more credit for progress in the art, though he could not find any account of instrumental music in the poems of Cowper, or the essays of Johnson, the Dramas of Racine, or the History of Hume. Why is it not equally absurd to make such an assertion with regard to the ancient Greeks? They were a people of at least as much ingenuity as any that have since existed; they had a decided taste for music, and, if we may judge by the general accounts of its effects which have reached us, great skill in its execution; they had instruments of many kinds, both wind and stringed, and yet they never could play unless some one sang. It is enough to state such a proposition; reply is unnecessary. We know, too, that music was constantly practised by the people and profoundly examined by their philosophers. The best treatise of ancient music, that has come down to us, is by Euclid, in which he examines the relation of harmonic sounds; and if we understood what he treats of without explanation, as familiar to all, we should probably arrive at some more just ideas of ancient music.

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* Our English Bible says, "Jubal was the father of all such as handle the harp and the organ." Jubal's organs were probably not like that of York, or of Haarlem. But the French translators thought proper to call Jubal the father of all such as handle the violin and the orgau; thus carrying the invention of the fiddle farther back than the painter who put one into the hands of Apollo.

Another thing which is generally agreed on by writers on this subject is, that the Greeks had but two divisions of sound in regard to time, namely, a long and a short one, and that the latter was just half the length of the former. Brilliant music this would make! The rudest inhabitant of Central Africa has a greater variety than this, and a better idea of musical rhythm. Just imagine Sappho whining out her lyrics in alternate longs and shorts, or Timotheus drawling before Alexander, "softly sweet, in Lydian measures." The softer the better, one would think, in such measure. But it cannot be imagined. It is utterly inconceivable, that the instincts of nature should be tamed down to such miserable insipidity in a people of lively imagination, like the Greeks. We cannot but regard it as a piece of that pedantry, which will believe nothing but what is on record, and will insist on interpreting the record according to its own limited conceptions. We venture to take it for granted, without quoting authors to prove it, that the Greeks, as well as the Hebrews, as they had instruments, could play upon them without singing, and that their long sound was subdivided into more than two equal parts.

Another point upon which all must be agreed, as there is no room for uncertainty about it, is, that the ancients had nothing corresponding to the musical score or notation of modern times. They had a name and a sign, derived from their alphabet, for every note of the scale, and according to the most respectable conjectures (see Burney's History) the scale embraced three octaves, or twenty-two notes; they had three genera, the diatonic, the chromatic, and the enharmonic, and fifteen modes or keys, in all of which the name of each sound was different, so that, according to the computation of [illegible], the names of their notes amounted to sixteen hundred and twenty. If this be true, the study must have been laborious indeed, and would require the three years, which Plato allowed the young to devote to it, to acquire its elements. The subject, also, which is mysterious, and indeed unintelligible, in the accounts that are given us of the general tones, or keys, of Grecian music; and it would be neither interesting nor profitable to attempt the hopeless task of explaining what so many scholars and musicians have failed to make clear. It is indeed manifest, that without a definite idea of the sound of a single note, or an accurate knowledge of a single interval of their scale, and with absolutely nothing to guide us as to their division of time, it can be but dreaming and trifling to think of proving any thing precise or satisfactory with regard to the musical composition of the Greeks. If proof be required that we really do know nothing important respecting it, we have a demonstration in the attempt of Meibomius, one of the most learned and thorough of all the commentators on ancient authors who touch upon music, to imitate the Grecian style of singing and playing. Queen Christina, of Sweden, to whom he had dedicated his elaborate work, desirous of obtaining a more accurate idea of the ancient music than she could do from the book, directed him to have instruments made of Grecian construction, to accompany a song composed on Greek principles as he understood them, to which another professor was to add a Greek dance. When the hour of the concert arrived, and the performance began, it was accompanied by the irrepressible laughter of the assembled court; and the enraged Meibomius, after inflicting a box on the ear of the person whom he suspected of instigating the plot, quitted Stockholm for ever.* Is it possible to imagine, for a moment, that what excited mere laughter at Stockholm, could have been the delight of Athens two thousand years before? Could a people, of so strong a musical taste as the Greeks, have been so singularly rude in the practice of the art? Is it not more probable that Meibomius, and all who have copied him in his account of ancient music, have fallen into errors, and made assertions not warranted by the accuracy of their knowledge?

One of these assertions, which seems to be of doubtful character, is that the octave of the ancients was divided into two tetrachords; and that the tetrachord was regarded as the principal division of the scale, instead of octaves. The word *tetrachord* means literally four strings, or an instrument of four strings, such as were some of the earliest kinds of lyres used in Greece. The question is, how were these strings tuned? Did they consist, as would be naturally supposed, of the third, fifth, and octave of the tonic, or were they, according to the theory of the tetrachords, the first, fourth, fifth, and eight, and the lyre thus divided into the two halves of an octave? It must be [illegible] the ancient lyre was played with the hand, or struck with a plectrum, and that there were no fingerboard and bow, like those of the violin, to regulate the sound of the strings. They must necessarily have given the sound to which they were tuned, like the strings of the modern harp. We must believe the ears of the Greeks, then, to have been differently constructed from our own, or to have been most extraordinarily obtuse, if they could have enjoyed the sounds which would have been produced by either the consecutive or simultaneous touching of these strings, "a combination," says Majer, "enough to drive a dog mad." But on the other hand, what could be more natural or more pleasing than to tune them at intervals of thirds, thus forming the fundamental chord? It is worthy of remark, too, that the outside strings were considered as fixed, being the extremes of the octave; and the inside strings as movable, that is, they might be tuned higher or lower. This, on the supposition that the middle strings were the third and fifth, would give an opportunity for a change of key from major to minor, or the reverse, without affecting the outside strings; but it would be to little purpose, if they were tuned as the fourth and fifth. One would think the half of the octave must be as much fixed as the extremes.

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* Another version of this story is, that the queen desired Meibomius to compose a mass according to his explanation of the Grecian music, and that its performance was [illegible] the inextinguishable laughter of singers, players, [illegible] —"*Discorso sulla Origine, Progressi, e Stato attuale della Musica Italiana di Andrea Majer.*"

It is extraordinary, if Meibomius, Martini, Burney, and others have interpreted the Greek system of music aright, that they should have imagined the ancients could have thought the fourth and fifth a chord with the first. This is manifestly impossible. It is a discord which the ear rejects with disgust and pain; and neither Timotheus, nor Philoxenus, nor Sappho, nor Apollo himself could make any thing else of it. Why should we insist, then, upon the Greek music being discordant, rather than imagine a few modern scholars to have fallen into error, especially when, from the scanty means of forming an opinion which are left, such an error is very fairly excusable? Still the language of the ancients respecting the tetrachords remains to be explained in some way; and if we may be allowed, without incurring the charge of temerity, to make a suggestion on this vexed subject, we should say the difficulty might, perhaps, be solved, by supposing them to have divided their notes by semitones instead of tones. It is obvious that the interval between major thirds is two tones, or *four* half-tones; and here we have at once a tetrachord of semitones, of which there would be three in every octave,* and the first notes of each tetrachord would be in harmony. Thus C, E, and G would accord with each other, and with the C which would complete the octave, and form the first note of the ollowing tetrachord. We merely throw out this uggestion, without venturing to assert that it would solve the problem, but leaving it to others o justify or reject it. "Non nostrum tantas omponere lites."

But the great subject of discussion among the terati, who have treated of ancient music, is whether or not the ancients understood counteroint, or the arrangement of different parts or oices in such manner, that there should be melody each, and harmony in the whole together. While some have contended, that this complicated art must have been understood, from the effects produced by music in ancient times, so far surpassing what it is able to do now, others again, not content with denying them the finished skill of modern composers, have even refused them any thing like harmony; and have contended, that the voices and instruments, however numerous they might be, were all in unison. In the absence of all historical record on the subject, one would say that each of these extreme opinions was equally improbable. With regard to the argument from the effects, it has been somewhat ludicrously overstrained. People seem almost to have believed in sincerity, that Amphion built walls, Arion rode dolphins, and Orpheus made trees dance, by the mere power of harmony. Probably the influence of song upon the modern art of navigation is quite as powerful as it was upon the ancient art of masonry; yet no one will contend that sailors are now-a-days very accomplished musicians. Nor can it be imagined, that these strange stories, though not taken literally, yet must be considered as poetical representations of wonderful effects. The results, stripped of their colouring, are no more extraordinary than are constantly produced now; and indeed we are persuaded it must have been no more difficult for Timotheus to have stirred the excitable temper of an Alexander to vehement action, than for a modern songstress to throw an audience into such a kind of ecstatic delirium, as many have witnessed, and some experienced, especially in continental theatres. Let it be remembered, that the greatest effects in music are always produced by the human voice. Instruments and harmony and scientific combinations of tones are all very delightful; but it is the song or the chorus which melts the heart with tenderness, or fills it with joy, or overawes it with sublimity. It is sympathy with emotion expressed, which we feel; and, as the human voice can give greater depth and variety of expression than any other instrument whatever, it cannot fail, as long as human nature continues unchanged, to produce the most powerful effects in music.

And what was there to render ancient Greece less musical than modern Italy? Had they not the taste, refinement, the quickness of perception, the climate, which seem suitable for the cultivation of the art in perfection? And shall we believe, that all this aptitude for music was lost, thrown away upon them, because a few students tell us they had no knowledge of harmony, and no other rhythmical divisions of sound than into one long and one short one? Those who think more highly of names than of nature will believe all this, hard as it may be to credit; but we think the dictates of nature are not to be set aside so easily. The musical ear must have fallen upon harmony by accident, if it could not attain it by study; and, as for their rhythmical divisions, to suppose they had but one long and one short sound, is denying the Greeks the musical instinct, of which, by general consent, they had a large share.

But this question need not be referred to nature alone for decision. There are some passages of ancient authors which would seem to be of difficult interpretation, if the ancients had no just ideas of harmony, but which are perfectly and at once intelligible, if such ideas be conceded. Take, for instance, the following language of Longinus; "For, as in music the principal note derives sweetness from those which are called chords,* so periphrasis," &c. (Chap. 28.) He could hardly have used language referring more plainly to harmonious sounds; and what can be made of those few words, unless his ear and those of his readers were accustomed to harmony?

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* Suppose C to be the tonic, the first tetrachord would cont of C, C♯, D, D♯; the second of E, F, F♯, G; the third of ♯, A, A♯, B.

There is also a passage of Tertullian, quoted by Majer, of which the following is a translation.

"Look at the prodigious richness of Archimedes. I speak of the hydraulic organ; so many members, so many parts, so many contrivances, so many passages and combinations of sound, so many changes of mode, a whole army of pipes, and all this one mass!"

Who could better describe the modern organ? Was Archimedes, then, ignorant of harmony? And those who listened to his instrument, were they unacquainted with its effects?

Consider for a moment the construction of the ancient theatrical chorus. It is well known that the Greek dramas were sung; that they were in fact what we call operas; and that the chorus was composed, as in modern times, of all the four parts into which the voice is divisible. Here is a description of it by Seneca. "Do you not see of how many voices the chorus consists? Some are shrill, some deep, some intermediate. The tones of woman are joined to those of man; instruments are added; and individual voices are merged in the union of the whole." Had the man who wrote this sentence no conception of music, except that derived from melody? The idea seems preposterous. It is not contended, that the ancients were familiar with counterpoint in all its modern extent and expansibility; but it is impossible to believe, that their knowledge of music reached no farther than to the production of melody or unison, after a due consideration of the passages quoted. Nothing arrives at perfection suddenly; and, though we are very much in the habit of thinking ourselves perfect, and that the science of musical composition has in our day reached its *ne plus ultra*, yet constant experience demonstrates a constant improvement; and perhaps our children will express as much wonder and pity at our music as we feel for the more imperfect attainments of our fathers. Indeed, if we consider for a single moment the number of changes that may be produced by a few notes, we shall be convinced that the varieties of musical composition are indeed infinite. In an octave there are twelve semitones, and upon any instrument, however simple, containing these twelve sounds, there may be produced four hundred and seventy-nine million, one thousand, six hundred changes. Multiply these by the number of octaves, and the number of instruments now in use, and we have a variety as inconceivable as it is inexhaustible. We are still far from perfection, then, and why should we suppose the ancients to have made no progress in an art, which we practise but incompletely ourselves, and the first elements of which are easily attained?

Another point, which strikes us quite as strangely as this, and which runs through almost all writers on ancient music, is, that the Greeks composed all their music in the minor mode. One might as well imagine all their poetry was elegiac, all their orations funereal, and all their songs death-songs. The earliest music of all countries is generally, like the music of the nursery, of a plaintive character, and in a minor key; but, whenever and wherever music has been cultivated as an art, it has never rested in that primitive and simple condition, so far as is really known; and, in the actual state of our knowledge, or rather of our ignorance of ancient music, it seems to us the very height of presumption to assert, that the ingenious Greeks never got beyond the threshold of musical composition. If any thing can be said to be known of the Athenians, it is, that they were a lively, witty, imaginative race, more resembling the modern Parisians than any other people of the present day; and it would be about as probable, that all French music should be minor, as that all Greek music was. It is a point which, of course, may be established by sufficient evidence; but such evidence has not yet been presented to us.

Of the effect of music upon the character of a people, as well as on that of individuals, a striking example is referred to by Burney and others, the authority for which is no less than Polybius, the judicious and careful historian. The Arcadians were generally distinguished for their mild character and amiable virtues, whilst the inhabitants of Cynætha, one of the cities of Arcadia, were as remarkable for the ferocity and quarrelsome barbarity of their dispositions. This is ascribed by the historian to the neglect of the Arcadian cultivation of music; and it is a suggestion, which by no means deserves to be lightly regarded. It is not easy to limit the effect of constant causes; and, if music had been the favourite entertainment of England, instead of bull-baitings, cock-fights, and sparring-matches, it is no very strained inference, that there might have been less of crime on the records of its courts, and less of harshness in the national manners. Certainly the kindred blood of Germany is favourably operated on by the prevailing fondness for music; and it is not easy to believe, that one who is really devoted to so refined and refining a pursuit, can be the victim of the coarser and more violent passions of our nature.

The unbounded variety of expression, of which music is susceptible, renders it easily applicable to all circumstances and situations where emotion of any kind is called forth; and it is a necessary appendage to all public celebrations of whatever ceremonies, in which any deep interest is felt. Its connection with the religious observances from which human nature cannot refrain, has in all ages been most intimate, and must continue to be so long as we seek to express in the strongest manner the deep emotions which are excited by religious subjects. The earliest recorded song is one of praise to Jehovah; and, as we trace the history of music down through the periods of Greek and Roman cultivation, we find it always connected with religious rites. No sacrifice could be complete, no pomp could be imposing, if not accompanied by the beautiful or the sublime of musical [illegible]. Their dramas, too, were originally very much of the nature of religious services. Founded on some tale of their mythology, they were made the vehicles of such religious and moral instruction as the wisest of the ancients could convey: and Livy informs us, that the first introduction of theatrical representations into Rome was expressly for a religious purpose, namely, as a means of averting a pestilence which was attributed to the anger of the gods.

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* Παράφωνοι is a word which nobody translates, but which, if its etymology may be trusted, is equivalent to the Latin *consonus* and the English *chord*.

Music has, from the earliest periods, been associated with the services of the Christian church. One of the first profane notices of the existence of such a sect is the letter of Pliny to Trajan, in which he says, "They assemble and sing hymns to Christ as a God." Even in those primitive times of simplicity and peril, when the cave and the forest were the Christians' only shelter, and the arch of heaven their only temple, even then rose the choral hymn; the fullness of the heart could not be repressed, and surrounded by the magnificent and the beautiful of creation, they adored their Creator in "music that whispered a heartfelt devotion in song and in prayer."

In after ages, when the persecuted religion, everywhere spoken against, became the favoured and triumphant system, music accompanied its introduction into the basilica, the temple, and the church. It has been fancifully enough imagined that the style of chanting, which was in use at that period, was derived from some species of more ancient, Grecian or even Hebrew music, thus forming a connecting link between the remotest ages and our own time. It is not impossible; but that is all that can be said in favour of a notion, which rests, like many others, advanced by the historians of music, on the imagination alone. The chanting of that era, as far as can be learned from the imperfect accounts of it transmitted to us, very probably resembled, in a great degree, that of the priests of the Roman church of the present day, with little variety of modulation, and little regularity of measure. Very much was left to the discretion of the singer, and the influence of tradition; the time was absolutely so, as no time table had yet been invented.

In the progress of taste, the singing in the church became more ornamented; and it is a curious instance of the uncompromising consistency of human nature, of the perpetual recurrence of the same prejudices and feelings, that complaints were from time to time made of the excessive ornament of music, which, to our ears, would probably be chargeable with any thing rather than too much grace. The *canto fermo* of the church was originally, in all probability, chanting in unison and with great simplicity. When ornaments were introduced, they must have been performed by a single voice, while the rest continued the original chant; and thus the performance gradually became separated into two parts, of which one was the principal air, and the other a connected accompaniment. This was called *discant*, or double chant; and, as music became more important in the church, performers were engaged for this service; and they were employed to sing one part and to *organize* the other, or imitate the sound of the organ in firmness and continuity. At least this seems a sufficiently probable interpretation of a word which can hardly be exactly defined now. The invention of the organ was begun in the early ages of Christianity, though it may not be possible to fix its precise date.

In the reign of Charlemagne a national controversy arose, which, though then settled by royal authority, has been open ever since; and will be finally put to rest when national rivalry shall cease. The singers of Charles's court attended him to Rome to celebrate the festival of Easter; and a violent dispute arose between them and the Italian performers, as to the taste and correctness of their execution of the music of St Gregory. The king gave it against his own choir, and employed Italian masters to reinstruct them in the true Gregorian style, which, he said, they had manifestly corrupted. From this period, the close of the eighth century, to the beginning of the eleventh, there was no such rapid or sudden progress in the art of music as to mark any particular point of time as an era in its history. Still, progress was made in it, and facilities were gradually accumulating for its study and its practice. The chanting became double, that is, in two regular parts accompanying each other in harmony throughout; and the system of notation was improved by the introduction, at first, of a single line, red for the key of F, and yellow for the key of C, above and below which line the notes were ranged, according to the acute or grave character of their tone. This was already a decided improvement on the preceding system of placing a hieroglyphic over each syllable of the word to be sung, representing the name and sound of the note; but a variety of plans were at different times tried, such as drawing a line for each note, then using six lines for the notes of a hexachord, and afterwards reducing the number of lines to four, and using the spaces also, as in the modern system. The four lines and three spaces were just enough to give a place to each of the seven notes of the octave in the key of C, which was once the only key used in the church, the pure diatonic scale being the only one practised. Afterwards the key of F was introduced, and rendered necessary the use of the flat B, or B *molle*, as it was then called. This rich sound was the first accidental ever heard in a church.* The separation of the notes from the words, by placing them in a score, gave an opportunity for doing what must naturally have suggested itself to the composer, namely, writing the discant or double chant on two separate sets of lines, in which each note would correspond with one of the other part, and with the syllable on which it was to be sounded. This was doubtless the origin of *counterpoint, note against note;* and from this small beginning has arisen, in the course of ages, the complicated art of the modern harmonist. The earliest notes used were square, or lozenge-shaped, without stems, and were easily and frequently changed in writing into mere points. Hence the word *counterpoint*. Stems were ere long added to some notes to mark a different duration, thus giving a hint of a more exact division of sounds by the time they occupied. Letters were also prefixed to the score, which were gradually corrupted into the clumsy clefs now in use. They were originally intended to mark the key F, or C, and not the voice by which the part was to be sung. Thus we see, that, previous to the commencement of the eleventh century, there was a beginning of many things which served to facilitate both the composition of music and the practice of singing, as lines, notes, accidentals, and clefs. The use of accidentals implies, of course, changes of key.

We say all this was begun before the eleventh century; for at that time appeared one of those distinguished men, who, effecting much for the progress of the science to which they devote themselves, acquire a renown even greater than their merits justify. This was Guido, the monk of Arezzo, who, in later times, has been held up to reverence as the inventor of counterpoint, and consequently the father of modern composition. From what has been said, it appears that this is rather more than he is entitled to. He doubtless contributed much to the improvement of musical composition in his day, but can scarcely be called the inventor of an art previously existing in its rudiments or simplest state. The praise to which he is entitled, and it is no small amount, is for having banished for ever the ancient names of the notes, and substituted for them six syllables that were found to predominate in the first verse of a hymn of St John, *ut, re, mi, fa, sol, la*. When the sixteen hundred and twenty tremendous names of the ancient scale are recollected, such as *nete synemenon, parypate meson, hypate hypaton, proslambanomenos*, &c., names which could be of no use in singing, and which, if they were not Greek, we should call Gothic and barbarous, it will readily be conceived what an immense facility was afforded to the student of music by the ingenuity of Guido. The progress of his pupils in a few months was equal to that made in as many years under the old system, and he was repeatedly sent for by the pope, to establish schools upon his plan at Rome. Such, however, was the seclusion of the monasteries, where alone, almost, music was then either taught or practised, so infrequent were communications, and so toilsome was travelling, that even this vast improvement was long in making its way into general use. It was not till ages after Guido's time, that the octave was completed by the addition of the syllable *si*, and still later that the Italians substituted the more open and euphonious sound of *do*, for the contracted one of *ut*.

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* It is to be presumed, that those at least, who believe in the Hebrew or Grecian origin of the *canto fermo*, will not contend that ancient music was always in the minor mode.

Great as are the obligations of music to Guido for giving simplicity to its arrangement and the method of instruction in it, yet it may be reasonably doubted if he contributed so much to the progress of the art as the inventor of the time-table, whoever he was. The regular subdivision of notes was not fairly and fully accomplished till the fourteenth century, three hundred years after the time of Guido, and it is uncertain by whom it was then achieved. Musical writers, according to Dr Burney, have heretofore ascribed it to Jean de Muris; but Jean de Muris himself attributes it to Master Franco of Cologne, thus carrying the invention back to the middle or end of the eleventh century. The probability seems strong, that many contributed their efforts, at different periods, to the perfecting of that branch of the art, which yields to none in importance. It was the proper and accurate subdivision of notes, and the strict observance of time, which made music a really independent art. Before that was studied, singing must either have been guided by the intention of the composer, and handed down by tradition, or it must have been entirely *ad libitum*, and at the momentary pleasure of the performer; and if a number of vocal or instrumental performers were to execute a piece of music together, nothing but the most immense and laborious practice could have enabled them to keep within harmonious distance of each other. The difficulties of the art must have been immeasurably greater than at present, and will account for the great number of years that were thought necessary to attain reasonable skill even in its then imperfect condition, and for the very slow progress which was made in its improvement. Think, for a moment, what would be the effect of setting a piece of music before even a well-instructed choir at the present day, in the score of which no measures were marked, and in which but one kind of note, of unvaried form, was used for every tone introduced; a piece, in short, from which all marks of time were obliterated. It is very much to be feared that the skill of the choir would, for a time at least, be baffled, and that the piece, however simple, would be rapidly converted into a specimen of "most admired disorder." This must be distinctly perceived, in order to attain an idea of the condition of music as an art, both in ancient times and in what are called the middle ages. The observance of time, if it does not itself constitute harmony, is certainly a necessary attendant on its existence; it is that, without which harmony cannot be created; and it must be marked, either by the distinctions of notes and rests, or by the direction of a leader, or by the undirected taste of the performer. In ancient days the time was indicated, very imperfectly of course, but still in some degree, by the length of the syllables to which the music was set, and by a leader who beat the time audibly. But in what way it was marked in the chanting of the church, in the first thousand years of Christianity, there are no means of determining. It was, perhaps, a thing of tradition altogether. No wonder, then, the progress of the art both of composition and of performance was slow. No wonder, where so much was left of necessity to the unguided improvisation of the singer or player, that bad judgment was more prevalent than good, and that the art was more and more corrupted from the simplicity which is the guide of correct taste.

Five centuries elapsed from the time of Guido, during which music was wandering in doubt, and obscurity, and weakness, without a guide on whom to rely, and without a definite object of pursuit. This long period was not, however, wholly lost. The caprices of even bad taste revealed some of the powers of song, as the freaks of alchymy developed some of the laws of nature. Rules of composition, and something like a regular system of notation, became of acknowledged authority; and in the fifteenth century the art of printing came powerfully to its aid, as it did to that of every other human pursuit. At length, in the sixteenth century, appeared one of those truly illustrious men, endowed with those great powers, with which the Almighty from time to time adorns our nature, for bringing beauty out of deformity, order out of confusion, and for stamping the impress of his fertile genius on his own and all succeeding ages. This was Johann Pierluigi of Palestrina. He was born at Praeneste in 1529, a period when, though the rules of musical composition were beginning to be settled, yet the taste and invention displayed in it were not usually such as to excite admiration or pleasure. So bad was the style of the music performed in the church, that pope Marcellus II., in 1555, was about to issue an edict to abolish the use of it in the sacred office, when Palestrina besought him to hear a mass of a different character from the frivolous, florid music then in vogue, and to give the noble art still a place where it could be most effective. He obtained the permission he asked, and produced a mass, which, by its simplicity and dignity, completely conquered the [illegible] and probably not unjust dislike the pope had expressed for the more popular music of the day. This signal triumph, obtained by a young man of twenty-five or twenty-six years of age, not only saved music from the threatened banishment from its sacred home, but placed Palestrina at [illegible] of the head of the art, as the best composer, not only of his own, but of all preceding time. This position he never lost, and through all succeeding ages he must continue to be regarded as the successful reformer of a barbarous era, and the father and founder of a better school, which, from that day to this, has been considered as the school of true taste. His compositions were numerous, comprising nearly all descriptions of the serious style now in use. They are still extant, and are not unfrequently performed in Italy by those who have a just reverence for his genius and skill. They may not possess the flowing ease of some more modern productions, but they are of a kind which will never cease to produce a strong effect upon men's minds and hearts. It is a mistake to suppose that there is a particular style of music which is adapted to a particular period of the world. Music is a universal language, and what is able powerfully to affect one generation of men will not fail to affect another. There may be conceits and fancies in fashion at certain periods or places, which soon pass away, because they are not in good taste; but that which can interest and please in tone, imitation, or harmony, will never cease to interest and please. Palestrina had the merit and the glory of pointing out the true path in which music should walk, the true mode in which she must produce her effects; and from his day to the present there has been but one school of good music. Divided and subdivided as the schools have nominally been, correct taste is one and indivisible; and all must be conducted by her guidance, or they cease to be schools of music, and degenerate into academies of uproar. There is, in reality, little to distinguish the so-called different schools, but the different degrees of attainment and genius of the authors who have been educated at different places. The obstacles which have obstructed the progress of some, and the facilities which have surrounded others, may, perhaps, be perceived; but all aim at the same ob- ect by the same general means, and therefore be- ong to the same school. This deserves, in some espects, to be called the school of Palestrina. He ointed out the path in which music may go on for ever improving; he taught men to explore that garden of inexhaustible fertility, in which the plants hat he trained still live, and in which the succes- ive brilliant productions of music will remain for ver fresh and fair. We do not mean that it is mpossible to point out differences between the omposers of one nation and those of another, or o deny that some are more successful in melody, nd some in harmony; but as we hold that both re necessary to the production of the best music, y defect in either must be counted as an imper- ction in the author as a musical composer, to hichever school, as it is called, he may belong.

From the days of Palestrina until now, the musi- l taste and the musical productions of the civil- ed world have increased in an accelerating ratio. vention has been applied, not only to the writ- g of music, but to the instruments by which it to be performed, and the art of execution on ose instruments; so that each successive age has ched a point, both in composition and perform- ce, which was either not thought of, or deemed attainable, by its predecessor. Since his time, o, another style of music has been introduced, d become so much a favourite as almost to sup- nt the more venerable music of the church, which s the first to be brought to some degree of perfection, and was the foundation of all that has succeeded. Towards the close of the sixteenth century music began to appear in company with the dramas, which were then popular; and, rude as the first essays probably were, and imperfect as the instrumental accompaniment certainly was, the effect produced upon the feelings of the audience was great beyond any thing known in those days, and was compared to that of the ancient Greek and Roman dramas.

The *moralities* and *mysteries*, the title under which the drama first appeared in the middle ages, were frequently performed by strolling companies upon an ambulatory stage; and there is an interesting account in Della Valle, of the first secular musical drama in Rome, which we shall extract from Dr Burney.

"The musical of my *cart*, or movable stage, composed by Quagliati, (his master,) in my own room, chiefly in the manner he found most agreeable to me, and performed in masks through the streets of Rome during the Carnival of 1606, was the first dramatic action, or representation in music, that had ever been heard in that city. Though no more than five voices, or five instruments, were employed, the exact number which an ambulant cart could contain, yet these afforded great variety; as, besides the dialogue of single voices, sometimes two, or three, and, at last, all the five sung together, which had an admirable effect. The music of this piece, as may be seen in the copies of it that were afterwards printed, though dramatic, was not all in simple recitative, which would have been tiresome, but ornamented with beautiful passages, and movements in measure, without deviating, however, from the true theatrical style; on which account it pleased extremely, as was manifest from the prodigious concourse of people it drew after it, who, so far from being tired, heard it performed five or six several times. There were some who even continued to follow our cart to ten or twelve places where it stopped, and who never quitted us as long as we remained in the street, which was from four o'clock in the evening till after midnight."

The scholar will remark the curious coincidence between the earliest dramatic representations of Greece and of Italy; and the musician will cease to wonder at the effects of ancient skill, when he reflects upon those of Della Valle's ambulatory *cart*. It may be observed, that here is an early mention of recitative, which seems to have been coeval with the secular drama, and which corresponds, in some degree, with what was originally called chanting in sacred music. It is the chanting of the theatre, with greater variety and expression than that of the church, but quite as far removed from the graceful regularity of the air or song.

During the succeeding century the opera gradually assumed its regular form, and became an established branch of public amusement. It was not, however, till perfected by the dramatic genius of Metastasio, that it assumed the high rank it has since maintained in theatrical literature. The last century was, in all respects, the most interesting and important period, which has occurred in the history of music. New branches of the art were cultivated, while those previously known were vastly developed and improved, by the genius of the greatest composers the world has yet seen. It would be at once useless and uninteresting to insert, in this rapid sketch of the progress of music, the long list of the names of those who, with various success, have devoted themselves to its different departments. Nor will it be possible to assign to precise dates, or to particular individuals, the improvements in instruments and methods of performance, which have successively added to the power of music and the means at the disposal of the composer. We must remain satisfied with the general fact that each following age has had greater resources than its predecessor, and with the probability that succeeding times will go on improving, as long as man is endowed with ingenuity, and feels an interest in the illimitable, the divine art. It is impossible, however, even to think of music without instantly recollecting the names of those illustrious men of the last century, who are identified with its very existence, and who, if no other composers had ever written, would have sufficed to make the era glorious, and to furnish the highest pleasures of music to all after time. We refer, of course, to George Frederick Handel, Joseph Haydn, and John Chrysostom Wolfgang Amadeus Mozart.

Although climate and scenery may affect the character of a national music, they can neither cause nor prevent its growth. In a clear and elastic atmosphere and a genial climate, the voice is generally more flexible and clear than in a cold and damp region. This would perhaps have an effect upon the music of such a country during its gradual formation. Italy is called the "land of song;" not probably because the Italians are a more musical people than the Germans, for instance, but because the voice is more generally good, and consequently there is more vocal music in Italy. No traveller can fail to be impressed with the appropriateness of the appellation. This difference would lead us to expect, what we find to be the case, on comparing the Italian with the German music. The former is more simple, more distinguished by melody, more passionate. The latter is profound, complicated, metaphysical, often more grand and sentimental. The former, from its simplicity, indicates that it is the music of the voice; the latter, by its rich and compound harmony, appears to be the result of instruments combined.

Natural scenery may also exert an influence on the character of a nation's music. It is difficult to imagine the same music to be the growth of the sunny plains of Lombardy, and of the awful scenery of the Alps, or the wild shores of the northern seas. Whatever influences are exerted upon national character by these differences, must become apparent in music, if the nation has any. And although we have no faith in the theory, that music is merely the result of man's imitative propensities, we have at the same time no doubt, that it is in a degree modified in every country by the prevalent sounds. For instance; in a land of tempests, where the mournful sigh of the coming storm, or the roar of its fury, and the deep, angry, and incessant roll of the ocean are constantly heard, we should expect to find corresponding tones in the music. But a milder region, where the song of birds and the busy hum of insects is continually heard, where the prevalent sounds of nature, the breeze, the purling stream, the cataract, are of a cheerful character, and where, from the gentleness of the scenery, even the storm is robbed of half its terrors, we should suppose that the music would partake of this character. And this we believe will be acknowledged to be the case, as far as experience goes.

But such influences as these can never create a national music. The climate of England is as well fitted to make musicians as that of Scotland or Germany, and the scenery is as lovely as that of Italy. What, then, prevents England from having her own music? Many reasons may be assigned. In the first place, England has been cut off from the inheritance of her earliest race. Her earliest race, when they retired to the mountains of Wales, carried with them their language and song. Those strains, however wild and uncouth, which their bards poured out, would, if they had continued to be heard in England, to be listened to, reverenced, cherished, and repeated from age to age, have become gradually more and more polished and harmonious, while at the same time they would have been as strongly stamped with individual character, as the music of any nation now is. The outpouring of the heart in song, the expression, in this form, of national character, the strains which nerved the rude warriors' arm, or which were thundered forth by victorious hosts, would never have been lost; but, even at this day, we should have heard strains, which perhaps struck terror into the hearts of Julius Cæsar's troops, or which resounded through the mysterious groves of the Druids.

It is thus that a national music is formed. The strains which are poured forth from an enthusiastic people, which really give utterance to popular emotion, are its first origin, and give it an indelible stamp. This enthusiastic outpouring of song generally happens only in the infancy and rudeness of nations, while superstition blinds and mystifies, while the passions are vehement and uncontrolled, and the poetry of life is untamed. The same causes which make a rude age poetical, would also give birth to music. The progress of the national music is afterwards analogous to that of the language. It is softened, improved, polished; but it remains essentially the same. The features which were derived from the deep sources of national character are never changed. The early airs are repeated from age to age, and others are fashioned from them, bearing the same distinctive character. Thus it has been with Scotland, with Ireland, and with Wales.

The first race with which England was peopled retired before the invader, and a new people, with another language, other customs, and other characteristics, took possession of the soil. These undoubtedly had their music, as well as their language and their poetry. And, had the Saxons continued to be the people of England, their music might perhaps at this day have been preeminent in the fine arts. But the Saxons were invaded and conquered; and where did a conquered people ever preserve their song? "They sat down by the rivers of Babylon and wept;" they hung their harps upon the willows, and their sound was heard no more.

The Norman came with his romances and his minstrels. But the song of the minstrel was of earlier times, and of heroes long gone by. The language he spoke was soon modified, corrupted, and finally changed; and the two nations, the conqueror and the vanquished, became blended like their languages, till the original characteristics of both were confused and almost lost. With the growth of the English language came the age of reality. The poetry of life was fast fading away. The time when national music is born had gone by in England, and the song of earlier days was lost.

Thus England was deprived of her traditionary music. Other circumstances, adverse to the growth of music as a creation of art, may be traced in her history. We speak of music as a creation of art, in contradistinction to the music which is handed down from a rude age, and whose origin is lost in antiquity. Among a highly endowed and enlightened people, music, as an art, may spring up at any time. Wherever there is a strong taste for it generally diffused throughout a community, composers will be sure to appear. Wherever a nation is peculiarly excited by powerful sentiment, this feeling is likely to burst forth in song. Thus, for instance, the Marseilles Hymn may be considered a genuine offspring of national enthusiasm.

Let us briefly compare the musical history of England with that of Italy. In the former, as we have seen, the traditionary music was lost. In the latter it was in some degree, at least, preserved; and was inherited, perhaps, from the remotest antiquity. For many centuries music in Italy was only preserved by the Christian church, having been solemnly proscribed at Rome after the death of the emperor Nero. The airs of ancient Rome, inherited perhaps from the Etrurians, the Oscans, or the Greeks, were chanted by the early Christians at their secret devotions, and were preserved by their enthusiasm and piety, when they could no longer be heard in the stately abodes of the senators. And this ancient music, it is believed, has never been lost, the Gregorian chant being nothing more nor less than the classical music of Rome. Thus, although music was almost extinct for a long period, it never perished; and when, after almost disappearing from even the church, it was revived by Ambrose, bishop of Milan, and improved by pope Gregory during the fifth century, Italy then was in possession of her traditionary music.

But the art owes its perfection in Italy to the efforts of the church. An institution which depends so much upon affecting the senses of its devotees, would not of course omit to use so powerful a means as music. And accordingly we find that both the oratorio and the opera owe their existence to the efforts of churchmen to promote a spirit of devotion in their followers. The earliest form of the spiritual drama was presented by the Christian pilgrims, who, on their return from the Holy Land, used to accompany their dramatic representations of the life and sufferings of our Saviour and of the Apostles, with songs and choruses descriptive of the same. About the middle of the sixteenth century, Philip of Neri established regular oratorios in Florence, with the declared object of calling the public attention to religious subjects. The sacred opera had already assumed a more complete form than the representation of the pilgrims. A religious drama had been performed at Padua in the thirteenth century; and it appears, that the "Annunciation" was enacted every year at the city of Treves.

From sacred to profane subjects the step was easy. Politian produced a musical drama on the story of Orpheus, in the latter part of the fifteenth century, and thus the opera was established.

It was the good fortune of Italy, that a refined state of living,—wealth, luxury, and elegance, and with them elevated and refined tastes,—were acquired before the enthusiasm and devotion, which mark a ruder condition of society, had departed. The church still continued to direct the taste, and to influence the heart, long after the rough features of barbarism had disappeared from Italy; and the church, as we have seen, took music under its peculiar patronage. Music, like the other fine arts in Italy, was the offspring of enthusiasm and a romantic spirit, united with civilization, refinement, and wealth.

The case was entirely different in England. We have seen, that the revived music of Italy was founded on the traditionary airs of the country. Had these been lost, the music might now have been of a very different character. In England there was no such foundation to build upon. In Italy the growth of music was owing to the efforts of the church. But all such influences were almost lost in England. The Romish church never exerted the influence on the arts in that country that it did in Italy, because its power was lost before England became refined enough to take pleasure in the fine arts. While Giotto was painting the walls of the Campo Santo at Pisa, and Lorenzo Ghiberti was casting his gates of Paradise for the old Lombard church in Florence, the English were industriously occupied in cutting their own throats and the throats of their neighbours. The reformation came; and with it a severe spirit, which looked with aversion upon outward forms and ceremonies, and all the magnificent paraphernalia of the Church of Rome. Many of the decorations were removed from the churches, many of the forms were interdicted, and the splendour of worship was much diminished. Little or no encouragement was given to the arts by the Church of England down to the time of Charles I. Then the spirit of Puritanism began to breathe its sternness over the land, and its effects were to retard the growth of the fine arts in England more than a century. In the midst of all these changes, that enthusiastic spirit which gives birth to art was lost. The fervour of the puritans, had their doctrines allowed it, might have originated a new and impressive music, which succeeding refinement would, perhaps, have improved to rival the music of Germany or Italy. But, unfortunately, all such accomplishments and exercises were denounced, and the barbarous twanging hymns of the puritans had no other effect than to destroy even the little taste for the art previously existing in England.

We have endeavoured to give a few of the more obvious reasons for the non-existence of English music, because we like to account for this want from external causes, rather than from a deficiency in the national capacities. We do believe, that, but for unfortunate influences, there might have been a musical literature peculiarly English; but, at the same time, we are forced to the conviction, that there is not in England so keen and delicate a perception of art, generally speaking, as in many other countries.

For many centuries the romance of life has been but little known in England. Even in the brilliant reign of Elizabeth, it was confined to a comparatively insignificant number. True, the accomplished Surrey went abroad proclaiming the charms of his fair Geraldine with spear and sword; Sidney realized in his own person the ideal virtue and courage of the heroes of the round table; Raleigh, and Essex, and Hatton, and many a noble knight beside, preserved the golden age of chivalry round the throne of their mistress. But, beyond the magic circle of the court, the romance of life ceased. It found no home among the people. There was nothing of that wild and poetical existence, which, for 150 years afterwards, was found in the highlands of Scotland.

But it may be said, there was as much of the romance of life in England as in Italy, from the time of the Medici downwards. This may be true, and yet nothing can offer a greater contrast than life in these two countries. We do not refer merely to the style of living, the manners and customs, the degree of comfort, and the amount of external conveniences; but to the spirit of society, the objects of life, the callings of men, the most important and absorbing interests. In England, life is business. Its objects are, improvements in the accommodations of existence; the means of keeping out the cold and wet; commerce, manufactures, voyages of discovery; and, above all, the absorbing game of politics, whether in the forum or the battle-field. These are the great and serious objects of Englishmen. Accomplishments, arts, amusements are the mere ornaments of life, but little prized, and never brought into comparison with the other weighty matters.

In Italy, the case is very different. There, life is art. The weighty occupations, the important business, the concerns of states, and the interests of governments, are art. Cities are more proud of their statues and their pictures, than of their convenient streets and their ingenious by-laws. States boast more of their artists, than of their internal improvements. And this admiration of the fine arts is not confined to the wealthy and refined. It pervades all classes, and becomes the high interest and the pride of all. Italy is, in truth, the *republic of art*. Music, sculpture, poetry, painting, are not there the exclusive property and privilege of any class. They belong to all. They are claimed and enjoyed by all. A few remarks of Bombet's, where he is speaking of the inutility of transferring the objects of art from Italy to France, are in accordance with what we have just remarked. He tells us, that, at Milan, we hear of Titian's "Christ crowned with Thorns," as soon as we arrive. At Bologna, the street valet will direct your attention to the St Cecilia of Raphael. "At Rome," he continues, "the person best known, and in highest estimation, is Canova;" "at Rome they will talk for a fortnight of the manner in which the fresco of the convent of San Nilo, painted by Domenichino, is going to be transferred to canvass. At Rome it is the great artist who occupies the public attention; at Paris, it is the successful general, or the favourite minister,—Marshal Saxe, or M. de Calonne."

These differences between England and Italy arise, rather, we apprehend, from the natural superiority of the latter country, than from any adventitious circumstances. The Italians have a keener sense of art than the English. Music is the native growth of the country; it is universally understood, loved, and practised. In England it is an exotic; of slow growth, and fit only for the saloons of the wealthy. There is an atmosphere of music in Italy. People hear it from their birth. It becomes one of the invariable concomitants of life. To be without music is not a conceivable idea. The fine arts are indispensable with Italians. They are more needed and more sought than those comforts which in England are prized as the first requisites for living. The Italians, to borrow the idea of a witty acquaintance, can go on without the necessaries of life; but the luxuries are absolutely indispensable.

This want of a general capacity to enjoy music or to appreciate it, in England, is, we believe, more than any adventitious difficulty, the reason why they have no national music. It is not enough, that the art should be cultivated by the wealthy; that the opera should be munificently supported, and that foreign performers should carry away fortunes from the kingdom. We would give more for the chance of a national music in a country where the labourers sing at their toil, or join in chorus as they return from the fields, than in that which devotes millions to the building of opera-houses, and the importation of performers.

The assertion, that England has no music, ought undoubtedly to be qualified. In saying this, we mean, in the first place, that there is no music which, from its peculiar character, we pronounce unhesitatingly to be English. We are never at a loss to distinguish Scottish music, or German, or Italian; but what are the characteristics of English music? In this sense, we consider that it does not exist. Again; there is no class of composers belonging to England, whose works form a distinct musical literature. Half a dozen writers of equal merit with Arne would have created such a literature; but they are not to be found. Handel we do not rank as an English composer; were he so, England might indeed boast of her national music. Yet we must acknowledge, that, by adopting Handel's music so completely, England has done all in its power to make it national.

The nearest approach made to a national music in England is perhaps in the cathedral chants and anthems. Here we think a peculiar and distinctly marked style may be discerned; and in this class of compositions are to be found many honoured names. Some of the composers of these lived in the early days of music; as Richard Farrant, who flourished in the former portion of the reign of Elizabeth, and William Bird, who was born about the year 1543, and whose famous canon, *Non nobis, Domine*, has been ascribed to Palestrina, the father of modern melody.

In speaking of the national music of England, it seems only just to cite a remark of the earl of Mount Edgecombe, which appears in the "[illegible] Magazine." He says; "There is another species of composition more peculiarly our own, and which I should call our only national music; I mean glees, which differ from any thing I ever heard, and in their style cannot be excelled. Their harmony is so full, rich, and melodious, when executed, as they long were, by the Messrs Knyvett, and the other performers accustomed to sing them together, that they completely gratify the ear; and he must be indeed fastidious, or greatly prejudiced, who cannot receive pleasure from their performance.—If the leading voice permits itself to wander from the strict melody of the air, to show its own grace or agility, as is too frequently the case when singers accustomed to other styles are called in, the effect is injured instead of improved, as the great beauty of those compositions is derived from the complete union and equality of all the voices, none preponderating, and from the simplicity of their execution. They then produce the effect of full chords struck on a finely-toned organ."

Our conclusions are, then, that England is less gifted with a sense of art than many other nations, and that this deficiency, connected with various adverse circumstances to be traced in the history and condition of the country, accounts for the want of a national music. At the same time we are of opinion, that, but for these adverse circumstances, English music would have at this time been in existence.

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NAPIER, William John, ninth lord Napier of Merchistoun, in the peerage of Scotland, was born at Kinsale, in Ireland, October 13th, 1786. At the age of sixteen he chose the navy as his profession; and he was a midshipman on board the Defiance at the battle of Trafalgar, when that ship captured the St Ildefonso, and carried the prize into Gibraltar. He afterwards served on board the Foudroyant, and the Imperieuse, captain lord Cochrane, who, in his despatches of the 7th of January, 1807, noticed him as having distinguished himself in a boat attack on Fort Roquette on the preceding day. On the 14th of November following he commanded one of two boats which captured a privateer of eight guns and fifty-four men; and was one of twelve in his boat who were wounded, two of whom died. On the 20th of February, 1808, he assisted in cutting out of the bay of Almeira a French letter of marque of ten guns, two brigs, and a large settee. Being sent to conduct an unarmed vessel, detained by the Imperieuse, to Gibraltar, he was, on his passage, aken by a privateer from Mahon, on April 3d, 1808, and carried into Ivica, where he remained a risoner for three months. He was released when he Spaniards began to throw off the French yoke, nd afterwards assisted in the defence of Fort rinity, and at the siege of Roses. He was on oard the Impérieuse, April 12, 1809, when the alcutta was taken. On the 6th of October folwing he received his commission as lieutenant; om which period he served in the Kent seventyur, and Sparrowhawk, eighteen, until his promoon to the rank of commander, June 1, 1812. e was wounded in the attack on Palamos, Dember 14, 1810. His first ship as commander as the Goshawk 16, stationed on the coast of talonia, where he had the misfortune to be ecked September 21, 1813. In March, 1814, he s appointed to the Erne corvette, of twenty guns; d in June following he obtained a post commission. the peace in 1815, lord Napier retired from active vice; but previous to his settling on his family ates, although then in the twenty-ninth year of age, he entered the university of Edinburgh, spent the first winter there in a course of dy. He then commenced a series of agricul al pursuits, with quite as much energy and sucs as he had followed his profession. Uniting ects, neither of them easy of attainment, the rovement of his family estate with the comfort happiness of the peasantry who resided on it, succeeded in making himself beloved by his er's tenants, and esteemed and respected by whole neighbourhood. His lordship wrote eatise on the system of agriculture best adapted he pastoral district in which he resided. On the 1st of August, 1823, he succeeded his father in the peerage. He was recalled to his profession on the 6th of May, 1824, having obtained the command of the Diamond of forty-six guns, then fitting for the South American station. On this station he remained about two years and a half, and then returned to his native country. In December, 1833, he received from the king a commission appointing him principal superintendant of the trade of the British nation in China. The interest at present attached to the Chinese question, induces us to give a somewhat detailed account of the proceedings consequent on this appointment. It would appear that his lordship's instructions empowered him to take a "high hand" with the Chinese, but in this he was not supported by the British merchants.

Lord Napier arrived at Macao, in his Majesty's ship Andromache, on the 14th of July, 1834. Notice of his lordship's arrival was immediately sent to the Hong merchants at Canton; and was by them forthwith forwarded to Loo, the governor of Canton, who issued instructions, dated the 21st of July, that his lordship should continue at Macao, and if he wanted to come to Canton, inform the merchants, that they might previously petition the governor, who would send the petition by post conveyance to Pekin. The distance of Pekin from Canton makes it a postage of at the least eleven days, and the return would have occupied eleven more; to which must have been added whatever time his imperial majesty might have thought fit to require for deliberation respecting the manner in which he should regulate the intercourse his lordship had been sent to superintend. To this delay lord Napier determined not to submit; and accordingly waiving all ceremony, and dispensing with the honours of a public entry, his lordship first appointed his coadjutors, and particularly the late Dr Morrison, to conduct his correspondence with the Chinese; and then, accompanied by them, betook himself to his boat, late in the day, on the 24th of July; and after encountering a stormy and rainy night on the Canton river, landed on the morning of the 25th at the factory at Canton, a building which has been allotted by the Chinese for the temporary residence of the English merchants. On his arrival at Canton, he sent a letter to the governor, which was refused at the city gates; in consequence of its superscription being that of a letter, instead of a petition. On the 27th of July, the governor issued a second order, wherein, after repeating part of the first, and referring to the past days of tranquillity, and ordering the merchants, linguists, and compradors to instruct the "new-come barbarians in all things," he proceeds to remark that hitherto the foreigners coming to Canton have been permitted to request and receive leave from the hoppo; and he then observes:—"On this occasion, the barbarian eye, lord Napier, has come to Canton, without having at all resided at Macao to wait for orders. Nor has he requested nor received a permit from the superintendent of customs, but has hastily come up to Canton,—a great infringement of the established laws. The custom-house writers and others, who presumed to admit him to enter, are sent with a communication requiring their trial. But, in tender consideration for the said barbarian eye being a new-comer, and unacquainted with the statutes and laws of the celestial empire, I will not strictly investigate. But it is not expedient that the said barbarian eye should long remain at Canton provincial city; it must be required that, when the commercial business regarding which he has to inquire and hold jurisdiction is finished, he immediately return to Macao; and hereafter, without having requested and obtained a permit, he cannot be allowed to come to Canton. The great ministers of the celestial empire are not permitted to have private intercourse by letter with outside barbarians. If the said barbarian eye *throws in* private letters, I the governor, will not at all receive or look at them. With regard to the barbarian factory of the company without the walls of the city, it is a place of temporary residence for barbarians coming to Canton to trade. They are permitted only to eat, sleep, buy and sell in the factories. They are not permitted to bring up wives and daughters; nor are they permitted to go out to ramble about. All these are points decided by fixed and certain laws and statutes, which will not bear to be confusedly transgressed. To sum up—the nation has its laws; it is so every where. Even England has its laws. How much more the celestial empire! How flaming bright are its great laws and ordinances, more terrible than the awful thunderbolt! Under this whole bright heaven none dares to disobey them; under its shelter are the four seas; subject to its soothing care are the ten thousand kingdoms. The said barbarian eye, having come over a sea of several myriads of miles in extent to examine and have superintendence of affairs, must be a man thoroughly acquainted with the principles of high dignity; and in his person he sustains the duties of an officer, an 'eye.' He must necessarily in every affair act in accordance with reason; then only can he control and restrain the barbarian merchants. I, the governor, looking up, will embody the extreme wish of the great emperor, to cherish with tenderness the men from a distance; and assuredly I will not treat slightingly the outside barbarians. But the national laws are extremely strict and close-drawn; we dare not in the least transgress. Let the said barbarian eye be very careful not to listen to the artful instigations of evil men, enticing him, until he fails of the object of the said nation's king in sending him so far. Uniting all, I issue this order to be enjoined. When the order reaches the said merchants, let them immediately act in obedience to it, and enjoin the order on the said barbarian eye, that (he) may know it thoroughly. Oppose it not. The said merchants have had intercourse with the barbarians for many years: their knowledge of their language and feelings must be good; the linguists and compradors are more closely allied to the barbarians. If they truly explain clearly, opening and guiding the understanding, the said barbarian eye assuredly cannot but obey. If there does be disobedience and opposition, it must be owing to the bad management of the said merchants, or to the instigation of the linguists. Assuredly, the said merchants shall be reported against, that they may be punished; and on the linguists the law shall instantly be put in full force. [A phrase for capital punishment.] Their responsibility, their lives are concerned. Tremble fearfully hereat! make not repentance (necessary)! These are the orders."

"Taoukwang, 14th year, 6th moon, 21st day."

Lord Napier positively refusing to quit Canton, a third order was issued, dated 30th July, in which the governor threatens to report the Hong merchants to the emperor, and commands that the "barbarian eye must immediately set off and leave the port, and not stop in the foreign factories outside the city loitering about."—"The affair," it is added, "concerns the national dignity. I, the governor, will be able only to report against the said merchants that they may be brought to trial." The following day, a fourth order was issued to the Hong merchants, who appear to be made the unfortunate scapegoats, in which the governor calls upon them to obey former orders, "to ascertain clearly for what the barbarian eye has come to Canton, and why, in disobedience of the regulations, he has not requested a red permit." They are required "to compel him, immediately, with speed, to return to Macao, and reside there till the governor shall have made a prepared reply to request the imperial will be made known, that it may be obeyed. Should there be any opposition," it concludes, "the said merchants will be held solely responsible." The orders of the viceroy and hoppo were by the Hong merchants attempted to be delivered to lord Napier, but his lordship declined to receive them. The Hong merchants, in consequence, offered to be the medium of communication between the viceroy and superintendent. This offer was likewise refused. Several fruitless negociations followed, into which we cannot here enter.

On the 2d of September, an edict was issued by the viceroy, announcing the stoppage of the British trade. The edict declares that it is becoming that the ships' holds should, according to law, be closed, and directs that buying and selling on the part of the English nation shall be put a stop to from the 16th of August, and that the Hong merchants shall withdraw all Chinese servants from the factories. A free exportation of all articles contracted for previous to the 16th of August was allowed. In consequence of this edict, the British superintendents were cut off from a supply of food, by the Chinese and all foreigners, and lord Napier and his suite were reduced to live on mess beef and pork from H. M. ships. On the 5th of September, lord Napier wrote to the secretary of the British merchants (Mr W. S. [illegible]), with reference to this edict, representing the stoppage of the trade, after the grant of [illegible] and delay by the viceroy's order of the 16th ult. as "a ground of grave complaint and remonstrance to the viceroy on the part of the British," and he observed, that the permission to embark goods paid for up to the 16th was vitiated in a great measure by the prohibition to land cargoes from the ships daily expected for the very purpose of embarking the cargoes so contracted for. He lordship declared his intention to make these two points "subjects of discussion with the authorities;" and with reference to the interdict of Chinese servants and workmen, his lordship stated that, with a view of remedying the inconvenience from the desertion of the Chinese servants, and to afford a protection to the company's treasury, it had been requested that a guard of marines might be landed within the premises, and that H. M.'s ships Imogene and Andromache might pass the Bogue and take up a convenient position at Whampoa, for the more efficient protection of British subjects and their property. On the 7th of September, H. M. ships Imogene and Andromache, under the command of capt. Blackwood, got under weigh to proceed through the Bogue. A stir was immediately perceived among the war junks in Anson's Bay, and the Chunpee and Taykoktay forts. All of them at first commenced firing blank cartridge, and the two forts followed it up immediately with shot, which from the distance fell far short and astern of the ships. The junks (about a dozen), got as far as they could into the shoally recesses of Anson's Bay. As the ships got within range of the Bogue forts, the wind suddenly shifted to the north, the Imogene standing towards Wangtong Fort on one tack, and the Andromache towards Anunghoy on the other. The Imogene waited until Wangtong had fired several shots, when the last one having nearly reached her was answered by two; another was answered by two more in quick succession; the Andromache, in the meanwhile, returning the fire of the Anunghoy battery with several well-aimed shot, some of which plunged into the parapet with prodigious effect, and raised clouds of dust, while others passed clean through the embrasures. The British fire, while it lasted, silenced the forts; but as it soon appeared that any pause on the part of the ships produced a renewal from the batteries, it became necessary to discontinue the order to "cease firing on the maindeck." The action was most brisk on getting into the middle of the channel; but the Chinese fired like men in a panic, aiming very wild, or rather letting fly as the ships arrived nearly at the line of fire for each gun as it was laid. There could not have been much reloading or training of the guns, after the first discharge. The only tolerable firing was on the part of Wangtong fort, on the island, from which the Imogene received several shot, one of them coming through the side of the quarter-deck, knocking down and slightly bruising a seaman with the splinters, and grazing the fore part of the mainmast,—a great many more passed between the hammocks and the awning. The whole of the slow-working passage occupied nearly an hour and three quarters, during which the frequent tacks so often exposed H.M. ships to be raked by the batteries, that the little or no damage experienced from the enemy sufficiently demonstrates their want of steadiness and skill. They ought to have sunk both ships. The round stern armaments proved extremely useful. The perfect indifference with which the Louisa cutter was manœuvred through the passage by capt. Elliot sitting upon deck under an umbrella, must have provoked the spleen of the Chinese; for several of their shot struck her, one of them cutting nearly a third through the mast, and another injuring the gunwale of the jolly boat. The lascars behaved extremely well on this occasion, the cutter being, on some tacks, nearly as much exposed to the fire of her friends as of the forts. Soon after having effected the passage and hammered the batteries to their perfect satisfaction, the wind obliged H. M. ships to anchor below Tiger Island.

Perpetual calms or baffling airs kept them at anchor here until the afternoon of the 9th, when they weighed to pass Tiger Island. In the interim, the Chinese were observed very busy in adding to their means of annoyance; a number of boats bringing additional supplies of arms and men, and a parade of some hundred matchlock men took place on the rampart. As the ships got under weigh with a fair breeze, the larboard guns were duly trained and prepared. The battery reserved its fire longer than was expected; but the moment the first shot had passed the ships' bows, a most tremendòus and well-directed cannonade was opened from them. The ships steered close under the fort, not more than 200 yards from it, the parapet overlooking them. The crews gave a loud cheer just as they got in front of the battery, and the effect was evident in slackening the enemy's fire. Some grape shot of a rude cast reached the ships in a spent state, which was answered with grape and canister, and the musquetry of the marines and top-men. One of their shot killed the captain of the Imogene's forecastle, and three more were wounded, but not severely. The Andromache had a seaman killed on the maindeck and three wounded. So many thirty-two pounders entered the embrasures, or shattered the stone parapet, that the Chinese loss must have been considerable. A Jos house within the fort was a heap of ruins. This battery got very severely punished, more business having been done in a shorter time than on the former occasion. The ships then anchored below second bar—from want of wind. During these proceedings, all British subjects were unmolested at Canton (except lord Napier and his suite,) being attended by their Chinese servants, and enjoying access to the bazaar as usual.

On the fourteenth of September, lord Napier (who had begun to be indisposed) wrote to Mr Boyd, stating that finding, from the edict of the 11th, that "any further endeavour on his part to urge on the government a more becoming line of conduct would be quite superfluous," and it being stated by the hoppo, in his reply of the 7th, that the trade would be opened as soon as he took his departure for Macao, he requested Mr Boyd to move the proper authorities to order up the British cutter at Whampoa, that he might "carry the same into effect."

The indisposition of his lordship was augmented by the continual worry of negotiations, and the necessary attention to drafting letters and copying chops, rendered unavoidable by the absence of the other superintendents and the secretary. His lordship and suite, in pursuance of arrangements with the Hong merchants, embarked in two chop boats, provided by the government, at 7 P. M. on the 21st of September; and immediately after, the guard of marines (thirteen men) embarked in another chop boat for Whampoa, bearing his lordship's order for the frigates to move out to Lintin. His lordship was obliged to be supported to his boat, through weakness. The *Canton Register* says, that "so far as lord Napier had quitted Canton without being officially recognised by the Chinese government," the result of his proceedings was a failure. It lays the chief blame of this on the dilatory proceedings of the men-of-war's boats; but, as a secondary cause, it mentions "the unpatriotic opposition of a part of the commercial community to lord Napier's measures." "If (reasons the same writer) the forts at the Eogue and Tiger Island had been blown up, the guns thrown into the river, and the frigates had been lightened and warped up the river, lord Napier would have had an interview with the viceroy, and all would have gone on smoothly." This may be doubted. For lord Napier's embarkation at Canton, the Chinese had prepared fire rafts (eight were counted,) which were brought in front of the factories. The river was also defended at Howqua's Fort by three tiers of spars across the river, a passage being left of about thirty feet, which was closed at night by a chain. The lower mouth of the right branch into which the river divides above the raft, was strongly blockaded by piles and sunken junks. The foreign trade was re-opened (except the English) on the 23d of September, and the English trade on the 27th.

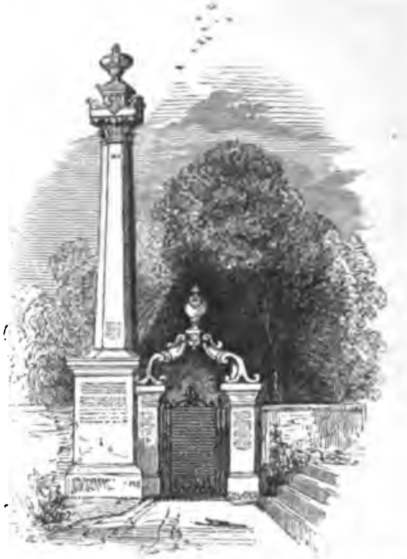
Lord Napier did not reach Macao till the morning of the 28th, having been thus between four and five days on the water, two or three more than necessary. The *Canton Register* states he was detained until his conductors should hear that the frigates had passed out of the river, and that he landed at Macao much weakened by "the barbarous delay and annoyance he met with." It appears that he was surrounded by mandarin boats full of men, the noise of whose gongs prevented rest; that they were compelled to anchor on the 25th for forty hours, gongs being beaten in the mandarin boats and crackers let off night and day, notwithstanding repeated entreaties from his lordship's surgeon; whilst he was tantalised by promises that he should go on, which were not realized. At half-past ten on the night of the 11th of October, 1834, lord Napier expired, being within two days of completing his forty-eighth year. His lordship was buried, at his own request, by the side of his late Chinese secretary, Dr Morrison. His remains, however, have since been brought to Europe, and interred in the family vault in Scotland. Lord Napier married, March 28th, 1816, Elizabeth, only daughter of the late hon. Andrew James Cochrane Johnstone, uncle to the present earl of Dundonald, by whom he had issue six daughters and two sons.

NASH, John, a modern architect of distinction; died May 13, 1835, at his seat, East Cowes Castle, in the Isle of Wight; in his eighty-third year. He was of Welch extraction, and amassed a large fortune as a speculative builder. He was the architect of several important buildings, of which we may name the Haymarket Theatre, the Church of All-Souls in Regent Street, the Church of St Mary, Haggerston, in the parish of Shoreditch, and the new Royal Palace at Pimlico. His Gothic mansion in the Isle of Wight was an early production of its owner. Of his own elegant house in Regent Street, a description and plates will be found in Britton and Pugin's "Public Buildings of London." In his designs for the houses in the Regent's Park and Regent Street, he adopted the idea of uniting several dwellings into a single facade, so as to preserve that degree of continuity essential to architectural importance; and, however open to criticism many of these designs may be, when considered separately, or in detail, he produced a varied [illegible] of architectural scenery, the aggregate effect of which is picturesque and imposing,—certainly superior to that of any other portion of the metropolis. York Terrace, Cumberland Terrace, Hanover Terrace, &c., in the Regent's Park, may be considered a continuation of this design, and, like the street, a great improvement upon the prevailing styles of domestic architecture. The architectural taste of Mr Nash has often been questioned as to the elevations of the buildings in Regent Street. The great design for the formation of the magnificent street originated with him; but the designs for the particular buildings were those of the various architects under whose special directions they were built, and with which his only concern was to ascertain that they were properly constructed.

NASMYTH, Alexander, an eminent landscape painter, was born in 1757, at Edinburgh, where he received his elementary education. In his youth he went to London, and became the apprentice pupil of Allan Ramsay (son of the poet), at that period one of the most esteemed portrait painters of the metropolis. He afterwards visited Italy, where he pursued his studies for several years in the society of the best Roman artists of the time, and in the fellowship of some contemporary students from England, whose names have since become classic in English art. Having returned to his native city, he commenced practising, with great success, as a portrait painter, and had the honour of pourtraying many of the most distinguished men and women of his time. To his friendship with Burns the world is indebted for the only authentic portrait which exists of the great Scottish poet. His passion for landscape, however, had been gradually gaining ground; and the pleasure he had in executing some of his earlier landscapes, and the applause with which they were received, led him for the most part to abandon portrait, and give himself up to his favourite pursuit. The distinctive characteristics of his chaste and elegant compositions are well known; his industry and popularity have been so unceasing, that there is hardly a mansion-house in England or Scotland, besides more humble domiciles innumerable, on whose walls a production of Nasmyth is not to be found. He took an active interest in all the institutions established in Edinburgh for the promotion of art. He was one of the five distinguished members of the original society of Scottish artists; he was one of the first elected [illegible] of the royal institution, to whose exhibitions he became a principal contributor; and, although his great age at the period of the union of the [illegible] of that body with the royal Scottish academy, prevented his joining their institution, he allowed himself to be named as an honorary member, and ever continued to feel deeply interested in its prosperity. His death took place on the 10th April, 1840, aged eighty-three. Soon after his return from Italy, he married the sister of Sir James Foulis of Woodhall, Colinton, by whom he had a large family, who have all distinguished themselves, more or less, in the arts.

NECROPOLIS, (*a.*) from νεκρος, dead, and πολις, *city*, city of the dead, was the name of a suburb of Alexandria, in Egypt, where temples, gardens, and mausoleums were erected, but now also applied to ancient cemeteries in general, and has been in modern days assumed as the designation of several (if they may be so called) *fancy* burying-grounds in our large cities. It is only quite recently that attention has been drawn in this country to the improvement of churchyards, or any endeavour made to render them objects of the picturesque or beautiful; and although it is, perhaps, scarcely to be wished that the stern realities of death should be disguised, by foolish decorations and parade, to the extent to which they are in the celebrated French cemetery of *Père la Chaise*, it is still highly desirable that burying-places should be removed from the hearts of populous towns, and that they should be so constructed as at least not to offend our notion of the repose of the dead, but rather to afford pleasing associations in connection with their memory.

One of the finest modern cemeteries, in point of appropriate situation and embellishment, of which any place can boast, is the NECROPOLIS of Glasgow, which the reader will see figured in Plate LXXIII. It is situated at the north-east part of the city, in the vicinity of the cathedral, and forms one side of that ravine on the other side of which the cathedral stands. The ground was purchased by the Merchants'-house of Glasgow about the middle of the seventeenth century, and being calculated for no other immediate use, was laid out as a plantation with Scots firs, elms, planes, and ashes. About the beginning of the present century, most of the old trees were cut down or rooted out, and new ones planted, while a stone wall was erected round the demesne, and a resident keeper placed over the whole. At this time, and up to its recent change to a burying ground, it passed by the name of the Fir Park. We do not positively know to whom belongs the idea of forming the place into a necropolis,* but it was James Ewing, LL.D., and formerly M. P. for the city, who first recommended the matter to the attention of the Merchants'-house. In 1828, a report of a committee on the subject stated, that, "the Fir Park appears admirably adapted for a *Père la Chaise*, which would harmonize beautifully with the adjacent scenery, and constitute a solemn and appropriate appendage to the venerable structure in its front, and which, while it afforded a much wanted accommodation to the higher classes, would at the same time convert an unproductive property into a general and lucrative source of profit to a charitable institution." After receiving, and partially adopting, various plans for converting the park into an ornamental cemetery, it was finally opened for interments in May, 1833. A Jew, it so happened, was the first person buried in this necropolis; and the Jews' place of sepulture, at the norhern extremity, is one of the most interesting in he ground. The inclosure contains accommodaion for washing the bodies before interment, ccording to the Jewish law, which law, it may be emembered, also forbids the depositing of one ody above another in the same grave. The folowing cut represents the ornamental column and ate-way of the Jews' burying ground.



On the front of the column are Hebrew initial letters, signifying, "Who among the gods is like unto Jehovah?" and on the pedestal is inscribed one of lord Byron's Hebrew Melodies, the last stanza of which we may quote;

> "Tribes of the wandering foot and weary breast,
> Where shall ye flee away and be at rest?—
> The wild dove hath her nest, the fox his cave,
> Mankind their country—Israel but the grave."

The iron-gate is curious, as having cast into its structure, so as to form a sort of reticulated ornament, the whole of the Scripture paraphrase, "Naked as from the earth we came," &c., which may be read with a little difficulty. A similar curiosity characterizes the gate which leads into the catacombs.

Several years before the Fir Park was converted into a cemetery, a monument was erected on its top to the memory of JOHN KNOX. This consists of a huge pedestal and column, surmounted by a statue, and from its elevated site, as well as size, it forms the most prominent, though not the most elegant, feature of the place. Its situation, however, in connection with the cathedral, may be considered appropriate, both by the friends and foes of the great Scottish Reformer. Near it stands a monument to WILLIAM M'GAVIN, (q. v. in the present supplement) who was buried here, and who was one of the most active promoters of the Knox monument. The foundation stone of the monument to Knox was laid, with great ceremony, on the 22d Sept., 1825, amid a large concourse of people. Mr M'Gavin's monument was erected two or three years after his death, which took place in 1832.

In the engraving which we have given of the Glasgow Necropolis, the monument to Knox occupies the summit of the hill; next to it stands an elegant monument erected to the memory of Dr Dick, an eminent clergyman belonging to the Secession church, who was for many years professor of theology to that body of Scottish dissenters, and who died in 1833. Adjoining Dr Dick's monument is Mr M'Gavin's, already mentioned; and farther down is a monument to the memory of Lachlan Lumsden, Esq. a native of the city, who bequeathed £4,000 to the Glasgow Royal Infirmary. The point from which the view of the Necropolis is taken is a little to the north of the road which leads into the cemetery. On the right, a portion of the ancient cathedral of the city is seen (described in the article *Glasgow*, q.v.) The bridge across the ravine was erected expressly as a passage into the Necropolis, no other entrance promising to combine so much beauty with picturesque effect. It is a spacious Roman arch of sixty feet span, from a design by Mr David Hamilton, and is called, somewhat affectedly, "The Bridge of Sighs." The foundation stone was laid, with much solemnity, on the 18th Oct. 1833. At the north-east corner of the bridge is this inscription, from the pen of the then dean of guild, Mr Hutchison: "This bridge was erected by the Merchants'-House of Glasgow, to afford a proper entrance to their new cemetery, combining convenient access to the grounds, with suitable decoration to the venerable cathedral and the surrounding scenery; to unite the tombs of many generations who have gone before with the resting-places destined for generations yet unborn; where the ashes of all shall repose until the resurrection of the just, when that, which is sown a natural body, shall be raised a spiritual body,—when this corruptible must put on incorruption,—when this mortal must put on immortality,—when death is swallowed up in victory, A. D. MDCCCXXXIII. Blessed is the man who trusteth in God, and whose hope the Lord is." In the grand façade at the east end of the bridge, which is to be seen in the engraving, is another inscription, composed by Principal Macfarlan, to the following effect: "The Necropolis, or ornamented public cemetery, was constructed by the Merchants'-House of Glasgow, in their property, to supply the accommodation required by a rapidly increasing population, and by embellishing the place of sepulture, to unite with more soothing associations that affectionate recollection of the departed which is cherished by those who survive. A. D. MDCCCXXXIII. 'E'en from the tomb the voice of nature cries.'" The gateway of the façade, like that of the Jews' burying ground, has a scripture paraphrase (the hymns of the Scottish church) interwoven with its rails.

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* Mr Strang, now city chamberlain, was an active promoter f the Necropolis. In 1831, he published a small volume, entled, "Necropolis Glasguensis; with observations on ancient d modern Tombs and Sepulture." This work, besides adcating the cause of the Necropolis, then in projection, gives learned and elaborate account of the various modes of anent and modern sepulture. Into the latter subject we do t here enter, as it is already amply discussed under other ads of the Encyclopedia, such as *Burying Places*, *Cemetery*, *mbalming*, &c.

We cannot, of course, enter here into any detail of the numerous objects of interest which the Necropolis presents. Its highly picturesque situation, overlooking the venerable cathedral and the old surrounding burying-ground, which the author of Waverley has so finely described,—its beautiful walks and carriage-roads,—its botanical ornaments, consisting of ornamental shrubberies, including many rare and interesting plants,—its varied and ever accumulating monuments, forming lanes and streets to which the eye sees no termination,—all must be left to the personal investigation or the fancy of the reader. Only a few years have elapsed since the place was opened, and yet how many have already found in it their last abode—how many honoured names can be already traced among its epitaphs! Every year must add to its melancholy attractions, and the mind gets bewildered in fancying what it may be a century hence. In some beautiful verses by a lady on the Glasgow Necropolis, we find the writer thus prophesying:

"Here may the Bard of Hope* repose
The laurel's classic shades among;
And here, when death her strains shall close,
May sleep the Queen of Tragic Song.†

"And He,‡ who late on Scottish lyre
The echoes woke of ancient time,
And sung, to notes of martial fire,
The death-doomed Harold's runic rhyme.

"And other lofty names shall shine
Recorded by their country's pride,
For oft hath genius' light divine
Beamed o'er the City of the Clyde."

NEWFOUNDLAND, (a.) Newfoundland isl., lying on the north-east side of the gulf of St Lawrence, between the parallels of [illegible] to [illegible] north latitude, and the meridians of [illegible] 44' to [illegible] 31' longitude west of Greenwich, is bounded on the whole eastern shore by the Atlantic ocean. On the north-east and north it is separated from the coast of Labrador by the Strait of Belleisle, which is about fifty miles long by twelve broad; on the north-west by the Gulf of St Lawrence, and on the south-west it approaches at Cape Ray towards Cape Breton isle, so as to form the main entrance from the Atlantic Ocean into the Gulf of St Lawrence. Newfoundland is the nearest part of America to Europe, the distance from St John's in Newfoundland, to Port Valentia on the west coast of Ireland, being 1656 miles. Its extreme length measured on a curve from Cape Race to Grignet Bay, is about 420 miles; its widest part, from Cape Ray to Cape Bonavista, is about 300 miles, and [illegible] ing its broken and rugged shores, the circumference may be stated at 1000 miles; the whole comprising an area of 36,000 square miles.

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* Thomas Campbell, a native of Glasgow.

† Joanna Baillie, a native of the district.

‡ William Motherwell, a native of Glasgow, the author of "Jeannie Morrison" and other beautiful ballads,—in whose case the poet's prophecy has been, alas! too soon fulfilled, for he already lies within the walls of the Necropolis.

Little is known of the interior of this vast island, which stands on an immense bank, in length about 600 miles, with a breadth of about 200 miles, and with soundings varying from twenty-five to ninety-five fathoms; the base being a mass of solid rock, with abrupt fissures, &c. There are apparently two banks, the outer one lies within the parallels of 44° 10′ and 47° 30′ north latitude, and the meridians 44° 15′ and 45° 25′ west longitude, with soundings from 100 to 160 fathoms. This bank appears to be a continuation of the Great Bank, and a succession may be observed the whole way to Nova Scotia. Newfoundland is in shape nearly triangular, the apex thereof being to the northward, and the base extending east and west from Cape Ray to Cape Race. Like the Nova Scotia shores, the coast is every where indented, at intervals of two or three miles, by broad and deep bays, innumerable harbours, coves, creeks, and rivers. The island all round is rocky (with pebbly beaches), generally covered with wood down to the water's edge, and with some lofty headlands on the south-west side.

The climate of Newfoundland varies according to the locale of the island, whether north or south; and the weather, although severe, is less fierce than that of Lower Canada; while, during a long winter, the brilliancy of the Aurora Borealis, and the splendid lustre of the moon and stars, give peculiar beauty to the atmosphere. The most remarkable feature connected with Newfoundland is the fogs on its banks and neighbouring shores.

The fogs of the Gulf of St Lawrence are attributed to the *coldness* of the gulf waters, which is believed to be constant a few feet below the surface as well as at great depths; every gale of wind brings this cold water to the surface, by which the temperature of the air is reduced below the dew point, at which suspended vapours become visible and precipitated. Those on the Banks of Newfoundland are most probably caused by the cold deep water flowing from the Poles to the Equator, being forced to the surface there in consequence of the interruption given by the banks to its course towards the southward. The surface water on the Great Bank is many degrees colder than the surface of the neighbouring sea, and much less than that of the gulf stream, which is within a short distance.

The fogs on the banks of Newfoundland, and even in the Gulf of St Lawrence, are sometimes so dense, that in fine, almost calm weather, with the sun shining over head, two vessels pass each other unseen, while the voices of persons talking an be heard from either ship. The fog appears to ie on the surface of the water, for when near land, n observer from the mast head may descry it quite listinctly, while on deck no object within a few ards distance is visible. The fogs are not generally attended with rain, but the decks are often tept wet, and the higher masts and rigging collect he condensed moisture of the atmosphere in large lrops.

In the early part of summer, when the waters ave not acquired a temperature approaching hat of the air, a peculiar mirage is observable ff Newfoundland and in the Gulf of St Lawrence; uring its early existence the line of trees with hich the hills are covered, seem raised much above the level of the rest, resembling a lofty hedge row; this, however, is soon lost, as all the trees apparently attain the same height, giving the appearance of an immense table, stretching from hill to hill; the shores in the meantime assume the semblance of a great wall, and the island seems girt with a similar inclosure, or bounded with precipices all round; their tops also look flat like tables, and the small islands often assume a flower-pot shape. Dr Kelly observed one instance in the river St Lawrence, where the islands of Bic and Bicquette appeared to join—their wooded tops to meet, leaving an arch, beneath which the waters seemed to flow. On the beach the spray seems to rise in foam to the tops of these imaginary cliffs, while the houses, &c., attain a similar height. Ships, according to their distance, present different elevations, sometimes rising to twice their real height, at others the masts reach only a few feet from the deck; sometimes the upper sails seem double—a second set being seen at a considerable height above the first—while again a second vessel's hull, sails and all, is seen above the first; but in no instance is inversion observed, and the object thus refracted is always visible to the naked eye. The fogs do not appear to be injurious to health. The longevity of the inhabitants is indeed the best proof of the salubrity of Newfoundland; in no country is old age attended with greater bodily vigour and mental animation. There are instances of fishermen 100 years of age being actively employed in the arduous duties of their calling.

An account of the number and description of Vessels employed in the Fisheries of Newfoundland, and of the quantities of Fish and of Oil, the produce thereof; stating likewise the Countries whereto the same was exported during the year ending 30*th June*, 1832.

Description of Vessels, &c.		Employed in fishing.		
		Num.	Ton.	Men.
Bankers	European	8	497	56
	Island ..	7	470	49
British European vessels on Labrador ..		5	562	59
Vessels from Europe	British ..	414	55278	3230
	Foreign..			
Vessels from the Colonies on the Continent	British ..	285	20083	1176
	Foreign..			
Vessels from the West Indies	British ..	45	4806	320
	Foreign..			
Vessels from Foreign America	British ..	61	6916	397
	Foreign..	3	509	25
Island registered vessels employed sealing	Sealing ..	407	27241	8649
	Labrador and coasting..	274	16432	3171
Number of men employed in the resident shore fishery, including catching and curing		..	..	16273
	Total....	1509	132794	33405
Quintals of fish exported to				
Spain, Portugal and Italy	....quintals	426673		
British Europe	do...	62359		
West Indies	do...	127687		
British America	do...	58585		
Foreign America, North	do...	..		
South	do...	32078		
	Total....	707382		
Tierces of salmon exported to				
British markets	tierces	1383½		
Foreign markets	do...	1919		
	Total....	3302½		
Barrels of herrings cured		3186		
Quantity of seal oil made	tuns	5933½		
		£ s. d.		
Average prices of	Fish per quintal	0 10 9		
	Salmon, per tierce..	3 2 10		
	Herrings, per barrel	0 11 10		
	Train oil, per tun ..	22 8 10		
	Seal oil, per tun....	23 8 0		

The cod fishery is the most important. The bank or deep sea fishery is now almost abandoned by the English to the Americans and French; the cod found on the outer bank is larger than that obtained in shore, and remarkably well adapted to most of the Spanish and Portuguese markets, but does not look so well when dried. The season commences with April, and ends in October. There are an immense number of boats of different descriptions engaged in the shore fishery; viz. punts, skiffs, jacks, or jackasses, western boats, and shallops, employing from one to seven men each, according to their size, and the distance they may have to sail before they reach their respective fishing grounds. The punts and small boats are generally manned by two persons, and occupied in fishing within a very short distance of the harbour, or circles to which they belong; the skiffs, carrying three or four hands, proceed to more distant stations, sometimes twenty or thirty miles; the western boats are larger than skiffs, and usually fish off Cape St Mary's, off the entrance of a bay so named; the shallops are still larger craft, but now almost obsolete: some of this latter class have been known to admeasure fifty or sixty tons each. The punts and skiffs, constituting what is termed a "Mosquito fleet," start at the earliest dawn of day, and proceed to the fishing grounds, when the cod are expected in great abundance, for at certain seasons they congregate and swim in shoals, and are not unfrequently as capricious in their resort as the winds which are said to influence their movements: these boats generally land their cargoes at the "Stage" at least once a day, usually in the evening, except it be in the height of the season, during capelin time, when they may occasionally load twice a day; the western boats and shallops split and salt their fish aboard, and return to their respective harbours when they may have expended all their salt, or loaded their craft.

The *stage* is erected on posts, and juts out into the sea, far enough to allow the boats to come close to its extremity, for the ready discharge of their cargoes; it is generally covered over, as the rain will injure the fish, and on the same platform is the salt house, with the benches for the *cut-throat, header, splitter*, and *salter*, the two latter having in point of wages the precedence, and the two former being on a par.

Having thus explained the method of cod-fishing, it remains only to describe the manner of curing. Each salting-house is provided with one or more tables, around which are placed wooden seats and leathern aprons for the cut-throats, headers, and splitters. The fish having been thrown from the boats, a man is generally employed to pitch them with a pike from the stage upon the table before the cut-throat, who rips open the bowels, and, having also nearly severed the head from the body, he passes it along the table to his right-hand neighbour, the header, whose business is to pull off the head, and tear out the entrails; from these he selects the liver, and in some instances the sound. The head and entrails being precipitated through a trunk into a flat-bottomed boat placed under the stage, and taken to the shore for manure; the liver is thrown into a cask exposed to the sun, where it distils into oil,* and the remaining blubber is boiled to procure an oil of inferior quality, and the sounds, if intended for preservation, are salted. After having undergone this operation, the cod is next passed across the table to the splitter, who cuts out the back bone, as low as the navel, in the twinkling of an eye.

With such amazing celerity is the operation of heading, splitting, and salting performed that it is not an unusual thing to see ten codfish decapitated, their entrails thrown into the sea, and their back bones torn out, in the short space of one minute and a half. The splitter receives the highest wages, and holds a rank next to the master of the voyage; but the salter is also a person of great consideration, upon whose skill the chief preservation of the cod depends.

For the next process, the cod are carried in hand-barrows to the salter, by whom they are spread in layers upon the top of each other, with a proper quantity of salt between each layer.

In this state the fish continue for a few days, when they are again taken in barrows to a square flat wooden trough (commonly called the ram-horn), full of holes, which is suspended from the stage head in the sea. The washer stands up to his knees in this trough, and rubs the salt and slime off the cod with a soft mop. The fish are then taken to a convenient spot, and piled up to drain, and the heap thus formed is called "a water horse." On the following day or two the cod are removed to the fish-flakes, where they are spread in the sun to dry; and from thenceforward they are kept constantly turned during the day, and piled up in small heaps called faggots, at night. The upper fish are always laid with their bellies downward, so that the skins of their backs answer the purpose of thatch to keep the lower fish dry.

By degrees the size of these faggots is increased, until at length, instead of small parcels, they assume the form of large circular stacks or piles, and in this state the cod are left for a few days, as the fishermen say, to "sweat." The process of *curing* is now nearly complete, and the fish exposed once or twice to the sun are afterwards stored up in warehouses, lying ready for exportation.

There are three qualities of cured cod-fish in Newfoundland. They are distinguished by the different titles of *merchantable fish*, and West India fish. Merchantable fish are those cured in the best possible manner, and having no apparent defect: Madeira are those having some slight blemish on the face, occasioned by an undue quantity of salt, or being sunburnt; West India having, in addition to the defect of the Madeira, some cracks in the middle, or broken at the tail.

Merchantable fish are generally shipped for the Spanish, Portuguese, Italian, and South American markets. Madeira and West India fish are supplied to the West Indies, and of late years a considerable quantity has been annually exported to the southern and western counties of Ireland. The west of England also consumes no unimportant quantity of salted cod annually.

Another fishery of great importance to the island and to England is that of seals, for the sake of their skins and oil. In round numbers, there were in 1831, seals caught 744,000; in 1832, 538,000; in 1833, 438,000; and in 1834, [illegible]

The fishing or catching of the seals is an extremely hazardous employment; the vessels are from 60 to 150 tons, with crews of from [illegible] to thirty men each, provided with fire arms, &c., to kill the seal, and poles to defend their vessels from the pressure of the ice. In the beginning of March, the crews of the vessels in their respective harbours collect on the ice with hatchets, saws, &c., and cut two lines in the frozen surface, wide enough apart to allow their schooners to pass; an operation of great labour, as after the thick flakes have been sawn or cut through they have to be pushed beneath the firm ice with long poles. The vessels then get out to sea if possible through the openings, and work their perilous way to windward of the vast fields of ice, until they arrive at one covered with the animals of which they are in quest, and which is termed a seal meadow; the seals are attacked by the fishers, or more properly speaking, hunters, with fire arms, or generally with short heavy batons, a blow of which on the nose is instantly fatal. The large ones frequently turn on the men,* especially when they have young ones beside them, and the piteous cries and moans of the latter are truly distressing to those who are not accustomed to the immense slaughter which is attended with so great a profit. The skins with the fat surrounding the bodies are stripped off together, the carcases left on the ice, and the pelts or scalps carried to the vessels, whose situation during a tempest is attended with fearful danger; many have been known to be crushed to pieces by the ice closing on them.

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* The livers taken from 300 quintals of cod fish ought to yield a tun of oil, but it sometimes requires more or less, according to the quality of the fish.

NEWPORT; a market-town in Monmouthshire, 147 miles west from London. It is situated on the river Usk, about four miles above its entrance into the Bristol Channel; and over the river is a handsome stone bridge of five arches, that in the centre being seventy-five feet in span, erected in 1800, by David Edward, son of the architect of the famous bridge at Pont-y-Prid, in Glamorganshire. The town is called by the Welsh Castell Newydd, which, as well as its English appellation, has been applied to it in contradistinction from the more ancient town of Caerleon, higher up the river. Leland, in the reign of Henry VIII. mentions it as a town in ruins; but since that period it has become a place of commercial importance, and undergone great improvements, principally within the last half century, having, in consequence of the extension of canal navigation and railroads in its neighbourhood, increased more rapidly than any in South Wales. The river Usk is here navigable for large vessels, there being a rapid and high tide, by means of which they are carried up the stream. The Monmouthshire canal and the Sirhowey railroad furnish communications between this town and the interior; and thus the means are afforded for the prosecution of commerce on an extensive scale. Coal and iron are the principal articles of merchandize exported. The local advantages of the town for ship building, occasions it to be prosecuted to a considerable extent; the river being so situated that vessels of great burthen can be launched from the docks into deep water. Besides iron foundries, here are breweries, rope-works, nail-factories, and n earthenware manufactory. Near the bridge over he Usk are the remains of the ancient castle of Newport, supposed to have been founded by Robert Fitzroy, earl of Gloucester, the natural son of Henry I., who possessed extensive domains in this art of the country, in right of his wife, the heiress f Robert Fitz-Hamon, a Norman baron. This ortress formed a parallelogram, and the walls were constructed of rubble, coigned with hewn stone. Population of Newport in 1831, 5441.

In November, 1839, Newport was the scene of a singular insurrection on the part of the chartists, which was not suppressed without considerable bloodshed. On the 4th of that month, a large body of chartists, many thousands in number, well armed, headed by Mr John Frost, late a magistrate of the place, marched into the town from the hills, and commenced a violent attack on the Westgate hotel, where the magistrates were sitting. After in vain remonstrating with the insurgents, the riot act was read, and the besieged, which fortunately included a party of the 42nd foot, were compelled to fire upon the rioters, who fled in all directions, leaving behind them a great quantity of arms, ten or eleven men killed, and from thirty to forty wounded. Several of the special constables and soldiers were wounded, some of them severely. The mayor, T. Philips, Esq. was shot in the arm and hip. But for the firmness and promptitude of the authorities, the town of Newport would have become a heap of ruins. It appears that, according to a preconcerted arrangement, on Saturday night (Nov. 2), the men began their march from the "hills" in the neighbourhood of Merthyr, &c. armed with muskets, pikes, crowbars, pickaxes, &c. dividing into various columns; one to attack Newport, another to keep in check the soldiers stationed at Brecon, while a third marched towards Monmouth to liberate Vincent, their former leader, from the gaol. After which they were unitedly to seize the whole of South Wales. With these purposes their march was continued, the rioters sacking the villages in their route, seizing the provisions, and compelling the whole of the adult male population to join them. At all the iron-works, &c. they blew out the furnaces. At four o'clock on Monday morning they halted in Tredegarpark, the seat of Sir Charles Morgan, bart. where they waited for about two hours for the junction of another division from Pontypool and its neighbourhood. The junction having been made, they formed at about six o'clock into two divisions, and marched into Newport, the one division marching down Stowhill, the other through Charles street, and both joining in the centre of the Main street. On arriving at the Westgate inn, they gave three cheers, and proceeded to attack the house, where they were so effectually checked. Frost and several others were committed to Monmouth gaol, and a special commission was issued for their trial. On the 9th Nov. lord Normanby addressed a letter to the mayor of Newport, expressing her majesty's high approval of the conduct of the magistrates; and on the 13th Nov. his lordship addressed another letter to the mayor, Thomas Phillips, jun. Esq. offering him, with her majesty's gracious sanction, the honour of knighthood.

The special commission for the trial of the chartist rebels of Newport was opened at Monmouth on the 10th of December, the judges being lord chief justice Tindal, Mr Baron Parke, and Mr Justice Williams. On the 12th the grand jury delivered by their foreman, lord Granville Somerset, true bills against John Frost, Charles Waters, James Aust, William Jones, John Lovell, Zephaniah Williams, Jenkin Morgan, Solomon Britton, Edmond Edmonds, Richard Benfield, John Rees, David Jones, George Terner (otherwise Coles) and John Rees, for high treason. In order to comply with the forms customary in trials for high treason, the court was then adjourned to the 31st of December. On that day the proceedings were resumed. The attorney and solicitor-general, serjeants Ludlow and Talfourd, with Messrs Wightman and Talbot, appeared for the crown; and Sir Frederick Pollock, with Mr Kelly and Mr Thomas, for the prisoner Frost. *John Frost* was put to the bar. The whole of the day was occupied in challenging the jury. On Wednesday, Mr Talbot opened the case on the part of the crown; and the attorney-general addressed the court and jury. After which Sir Frederick Pollock objected to the calling of the witnesses, in consequence of the list of them not having been given to the prisoner, Frost, agreeably to the terms of the statute. Mr Kelly followed on the same side, and the attorney-general was heard in reply. The chief justice Tindal decided that the trial should proceed, and the opinion of the judges be taken, in the event of the result of the trial making such reference necessary. On the third day the evidence was entered into; and on the eighth day (Jan. 8,) after the most patient attention of the court and the jury to the laborious and eloquent addresses of the counsel, and to the immense mass of evidence, the learned chief justice summed up in a very clear, able, and impartial address to the jury, who retired for half an hour, and then returned a verdict of *Guilty* against Frost, with a strong recommendation to mercy. *Zephaniah Williams* was then placed at the bar. His trial occupied four days: and Mr Thomas conducted his defence. The jury returned a verdict of Guilty, with a recommendation to mercy as before. *William Jones*, watchmaker, was put to the bar. Mr Richards conducted the prisoner's case, and the trial was concluded on Wednesday Jan. 16. A verdict of guilty with a recommendation to mercy, was also returned in this case. Charles Walters, Jenkins Morgan, John Rees, Richard Benfield, and John Lovell, were then placed at the bar; and having been allowed to withdraw their plea of not Guilty, they then pleaded Guilty. Upon them also sentence of death was passed, the court intimating that they would be transported for life. Four were discharged, the attorney-general declining to proceed against them. Two forfeited their bail; and nine, having pleaded Guilty to charges of conspiracy and riot, were sentenced to terms of imprisonment not exceeding one year. On the 25th Jan. the objection raised by Sir Frederick Pollock was argued before the fifteen judges in the court of exchequer; when the attorney-general, the solicitor-general, Mr serjeant Ludlow, and Mr serjeant Talfourd, appeared as counsel for the crown; and Sir F. Pollock, Mr F. Kelly, and Sir W. Follet for the prisoners. The arguments were continued on Monday the 27th, and Tuesday the 28th, when the judges decided against the objection by a majority of nine to six. The royal mercy was, however, eventually extended to Frost, Williams, and Jones, whose sentence of death was commuted to transportation for life.

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* The hooded seals sometimes draw their hoods, which are ot-proof, over their heads.

NEWPORT; a town in the Isle of Wight, seventy-nine miles from London. It is situated nearly in the centre of the island, on the river Medina, which falls into the sea seven miles below the town, and consists of five parallel streets, running east and west, and crossed by three others, at right angles, at the intersections of which are three large squares, serving for the cattle, corn, and poultry markets. Most of the agricultural produce of the island is sold at these markets, which are held on Wednesdays and Saturdays. The church, which is dedicated to St Thomas-à-Becket, is situated in the centre of one of the squares, and is a spacious edifice, consisting of three aisles of equal length, separated from each other by pointed arches, and an embattled tower at the west end. About a mile from the town is Carisbrook castle (which see, in the present Supplement) memorable as a place of confinement for Charles I. Population of Newport in 1831, 4081.

NEW RED SANDSTONE, or variegated sandstone, lies above the coal measures, but with its strata in an unconformable position to those on which it is placed. In appearance this sandstone is of a deeper red than the general hue of that of the coal measures, and also of a more friable porous consistence, and is altogether evidently a different deposit. In England the new red sandstone commences at Tynemouth, and extends in a south-westerly direction as far as Cheltenham, covering the surface of the counties of Durham, York, Nottingham, Stafford, Warwick, Cheshire, and Shropshire. In it both animal and vegetable petrifactions occur, though sparingly; it also contains beds of gypsum and rock salt. It consists of subordinate formations, which may be divided into upper, middle and lower beds. The lower beds consist of a coarse conglomerate cemented by a ferruginous sand or marl, the middle beds of magnesian limestone, and the upper of sandstone or marl. In these upper beds are found gypsum or sulphate of lime, and rock salt. The valuable mineral of muriate of soda, or common salt, is found in considerable quantity dissolved in the waters of the ocean; also, in salt springs issuing from the earth in various kinds of strata, and in beds or masses sometimes of immense extent in this new red sandstone. Various opinions are entertained regarding the original production of such beds. By some it is supposed, that the salt has been deposited by the gradual evaporation of inland salt lakes, the muriate of soda, the least soluble of the salts, being first precipitated, while the other salts that are more easily soluble in smaller proportions of water have been drained off, thus leaving a bed of pure salt. Others again have conjectured, that salt is a chemical production, formed by the decomposition of granite and other rocks containing a large proportion of soda. Rock salt, when dug from the pit, has a reddish hue, being tinged by iron and other impurities, from which it is freed by repeated solution and crystallization. Rock salt is found in England at Norwich, in Cheshire, and Droitwich in Worcestershire, besides several salt springs in the northern counties, and in Leicestershire; in France, in the salt springs of Salins; in Switzerland, Spain, Hungary, Poland, and various other places on the continent of Europe. It is abundant in the deserts of Caramania in Asia; in the table land of Tartary; in Thibet and Hindostan; in Caffraria, near the Cape of Good Hope, and in both North and South America. Rock salt has also been discovered in New South Wales, so that this important substance seems universally diffused over the globe. The salt district in Cardona in Spain comprehends the hills on which the town is situated, and the environs for several miles. The surface is almost every where covered with vegetable soil to the depth of six inches or more, which renders it productive. The rocks of salt form a valley, a mile in length, and half a mile in breadth

The principal of these rocks is 663 feet in height, and 1220 feet in diameter at its base. A chain of hills of salt traverses the whole valley. The mountain of red salt is so called, because that colour predominates, but the colours vary with the altitude of the sun and the moisture of the air. A little stream runs through the valley. All these mountains contain crevices, and chasms having spacious grottoes, where various shaped stalactites of salt hang from the roofs. Nothing can compare with the magnificence of the spectacle which the mountain of Cordova exhibits at sunrise. Besides the beautiful forms which it presents, it appears to rise above the river like a mountain of precious gems, displaying the various colours produced by the refraction of the solar rays through a prism. The salt mines of Wieliczka, near Cracovia, in Poland, are the most extensive and most celebrated in Europe. They are worked at the depth of 750 feet. The mine extends under ground for upwards of a league. It has numerous galleries, and a whole village, containing many workmen, with their families, horses, waggons, &c. It is remarkable that in these mines of rock salt, there are springs of fresh as well as salt water. In the new red sandstone of Massachusetts, North America, numerous impressions of the foot marks of several species of birds have been lately discovered by professor Hitchcock. This sandstone covers a large extent of country, and in its present position lies inclined, at an angle of thirty to forty degrees; but when impressed by the feet of those birds, it must have been horizontal, and have formed the soft and yielding sands of some bay or estuary. These impressions have been called Ornithichnites, or stony bird tracts. (See a full description of them, under the head, *Ornithychnology*, in the present Supplement.) Impressions of the footmarks of animals have also been discovered in Scotland, in some quarries in Dumfriesshire, also of the new red sandstone. These impressions show distinctly the flat foot of an animal with claws, and they have been conjectured to be of the class Reptilia, most probably tortoises or lizards, or perhaps both. From the regular succession of hind footmarks coming almost close upon the fore feet, there can be no doubt but that the animal was a quadruped. On some of the slabs, the appearance of scratching, or slipping, is evident in the impressions, as if the animal had been scrambling up an inclined plane.

NEWTON, Gilbert Stuart, R.A.; an eminent painter, was born in Halifax, Nova Scotia, on the 20th of September, 1794, and was the twelfth and youngest son of the hon. Henry Newton, collector of his Majesty's customs in that province. On his first arrival in Europe, he visited Italy, and on his removal to this country entered himself a student of the Royal Academy. The first works by which he became extensively known, were his "Forsaken" and his "Lovers' Quarrel," engraved in the "Literary Souvenir" of 1826; his "Prince of Spain's Visit to Catalina," engraved for the same work in 1831, and painted for the duke of Bedford; and a scene from the "Vicar of Wakefield." Though Newton acquired skill both in drawing and in colour, and became acquainted with the fine proportions and harmonious unities of the antique, he was more remarkable for delineations in which beau-ideal drawing had little to do, but expression every thing. He had less inclination for the stern and the severe, than for the soft, the gentle, and the affecting. His favourite model for imitation was Watteau. He contented himself with painting small pictures; and the subjects which he embodied were either drawn from nature around him, or found in the pages of our novelists and poets. To enumerate all his pictures would be difficult, but the names of a few of them will be sufficient to awaken pleasing recollections: 1. "Portia and Bassanio," from the Merchant of Venice; 2. "Lear attended by Cordelia and the Physician;" 3. "Lady Mary Fox;" 4. "Abelard;" 5. "Jessica and Shylock;" 6. "The Vicar of Wakefield restoring his Daughter to her Mother;" 7. "Sir Walter Scott." His happiest works are of a domestic and poetic kind; he loved to seek expression in a living face, and, moulding it to his will, unite it to a fancy all his own: some of his single figures, particularly females, are equal in sentiment and colour to anything in modern art. They are stamped with innocence as well as beauty. He was a slow workman, and accomplished all by long study and repeated touches. He sometimes received high prices for his works. The duke of Bedford gave him 500 guineas for the "Prince of Spain's Visit to Catalina," and lord Lansdowne paid him 500 guineas for his "Macheath."

About 1832, he visited America, where he married a young lady of considerable personal attractions. He was elected a royal academician in 1834. Shortly after his return to England he exhibited unequivocal signs of insanity, which increased until it became necessary to send him from home. Four days before his decease he recovered the exercise of his reason, spoke of his approaching end with calmness and resignation, and exhausted nature finally sunk into the sleep of death without a struggle or sigh. He died at Chelsea, on the 5th Aug. 1835, aged forty. His remains were interred in Wimbledon churchyard on the 13th of August. Mr Newton was tall and well proportioned, and somewhat affected in his manner; but a perfect gentleman, and a very respectable scholar.

NEW YORK, (*a*.) By the census of 1835 the population of New York was 270,089. In 1825 it was 166,086, and in 1830, 202,589; the increase in these intervals of five years being respectively at the rate of 22 and 33 per cent. At the mean rate of increase the population at present (1840) must amount to above 350,000, thus doubling within the term of *fourteen* years.

The following table shows various particulars of the population, and the number of marriages and births in the year preceding the census.

Population of the City of New York, 1835.

		Per Cent.			Per Cent.
Males	131,624	48·73	Whites	254,892	94·4
Females	138,465	51·27	People of Colour,	15,197	5·6
	270,089	100·		270,089	100·

Males subject to military duty	23,658 or 1 in 11·4 of population.	
— entitled to Vote	43,091 or 1 in 6·2 —	
— Aliens*	27,669 or 1 in 10· —	
Females, Married under 45	39,975 or 28·87 per cent.	Of Total No. of Females.
— Unmarried, between 16 & 45,	35,697 or 25·78 —	
— — under 16	46,503 or 33·58 —	
— Married and Unmarried, above 45	16,290 or 11·77 —	
Persons of Colour not taxed	14,977	
— — taxed	152	
— — entitled to Vote	68	
Paupers	1,799 or 1 in 150 of population.	
Deaf and Dumb	175 or 1 in 1,543 —	
Blind	105 or 1 in 2,572 —	
Idiots	32 or 1 in 8,440 —	
Lunatics	32 or 1 in 8,440 —	

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* Female aliens were omitted in the census of 1835, but are estimated at about 27,000, which would make the total number of aliens one-fifth of the population.

Marriages during the preceding year 1,990 or 1 to 136 of population.
Births during the preceding year, Males 4,528 or 50·53 per cent.
— — Females 4,432 or 49·7 —

Total . . 8,960 or 1 in 30·14 of population.

The Deaths in New York, in 1837, amounted to, Males, 4,712 or 53·96 per c.
— — Females 4,020 or 46·04 —

Total, including 550 still-born and premature 8,732 100·

In 1836 the Deaths, including 506 still-born, &c., were 8,009

The rate of mortality, according to the population (still-born excluded) has been—

In 1805,	population, 75,770;	deaths, 2,297;	or 1 to	32·96
1810	.. 96,373	.. 2,073	.. 1 ..	46·49
1815	.. 100,619	.. 2,405	.. 1 ..	41·83
1820	.. 123,706	.. 3,326	.. 1 ..	37·19
1825	.. 166,086	.. 4,774	.. 1 ..	34·78
1830	.. 197,112*	.. 5,198	.. 1 ..	37·92
1835	.. 270,089	.. 6,608	.. 1 ..	40·87

The mean average duration of life, in New York, is estimated to have been 25·45 years, between 1830 and 1835, inclusive; and only 22·05 years in 1836.

Places of Nativity of those who died in 1836 *and* 1837.

	1836	1837	Total.	Per Cent.
England and Wales	320	307	627	3·74
Ireland	1,378	1,206	2,584	15·43
Scotland	99	74	173	1·03
Total of Great Britain and Ireland	1,797	1,587	3,384	20·20
Germany	213	198	411	2·46
Other European Countries	103	84	187	1·12
British America and West Indies	21	30	51	0·40
South America, Africa, and Asia	3	6	9	
At Sea	3	3	6	
Unknown	148	184	332	1.98
Total Foreign States	2,288	2,092	4,380	26·16
The United States	6,721	6,640	12,361	73·84
Total	8,009	8,732	16,741	100·00

In June 1837, the whole number of paupers in the alms-house, hospital, and Long Island farms, was 2,453, including 871 children, chiefly American. In the penitentiary and bridewell were 335 male prisoners, and 286 females, white and coloured, making a total of 3,074 paupers and prisoners under the care of the commissioners of the alms-house; or, deducting the children, 2,203. In September 1837, the total number was 3,332, of whom 2,045 were foreigners, and 1,287 native Americans. In the year ending the 10th September 1837, an increase had taken place of 1,005 inmates, of whom 887 were foreigners. Of the 1,209 patients treated in the hospital in 1837, 982 were aliens, and only 227 were born in America. Scarcely a vessel arrives from certain ports of Europe with steerage passengers which does not increase the applicants for admission into the alms-house.

The arrivals from foreign ports at the port of New York were, in—

	1835.	1836.
American vessels	1,565	1,583
English	287	366
Other nations	192	344
Total	2,044	2,293

The coasting arrivals are between 4,000 and 5,000 per annum.

The number of passengers that arrived at New York from foreign countries, in the six years 1831–36, was 266,494; or, on the average, 44,415 per annum. In the year 1836 they amounted to 60,540; and the number is stated to have increased greatly in the season of 1837, the average being nearly 2,000 per week.

In 1791, the exports from New York to foreign ports, amounted to £563,730. In the year ending the 1st of October 1835, they were as follows:—

Domestic Produce.—In American vessels	[illegible]	
In foreign —	[illegible]	
		[illegible]
Foreign Produce.—In American vessels	[illegible]	
In foreign —	[illegible]	
		[illegible]
		[illegible]

The value of the Imports in the same year was—

In American vessels	[illegible]
In foreign —	[illegible]
	[illegible]

In 1832, the customs' revenue on imports into New York amounted to £2,925,[illegible], while the total customs' revenue of the United States has seldom exceeded £4,950,000. In 1834, the total tonnage of New York, registered, enrolled, and licensed, was 359,222 tons, or upwards of [illegible] of the whole tonnage of the United States. The number of vessels in port, in the busy season of the year, varies from 600 to 700, exclusive of about fifty steamers.

During the thirty-six years to 31st December 1832, 47,744 patients were admitted into the New York hospital, whose nativity is recorded as follows. The table is interesting, as showing the tendency of emigration from different parts of the Old World into the New, up to the period to which the table extends.

Natives of the United States		[illegible]	or [illegible] per
— England	[illegible]		
— Wales	111		
— Scotland	[illegible]		
— Ireland	[illegible]		
		[illegible]	— [illegible]
— The West Indies		[illegible]	— [illegible]
— Nova Scotia		[illegible]	— [illegible]
— The Ocean		[illegible]	
— Africa		[illegible]	— [illegible]
— The East Indies		[illegible]	— [illegible]
— Germany	[illegible]		
— Holland	[illegible]		
— Prussia	[illegible]		
		[illegible]	— [illegible]
— Denmark	[illegible]		
— Norway	[illegible]		
— Finland, 5; Sweden, 708 =	713		
		[illegible]	— [illegible]
— Russia, 65; Poland, 13 =		[illegible]	— [illegible]
— France, 734; Switzerland, [illegible] =		[illegible]	— [illegible]
— Italy, 204; Sicily, 20 =		[illegible]	— [illegible]
— Spain, 185; Portugal, [illegible] =		[illegible]	— [illegible]
Total		[illegible]	[illegible]

The great difference in the social condition of native Americans and of the emigrants, particularly Irish, who flock to New York, is distinctly shown by the following statement of the birthplaces of the patients admitted to the Bellevue hospital in 1836:—

Americans		[illegible]
Irish	[illegible]	
English and Welch	[illegible]	
Scotch	[illegible]	
		[illegible]
Germans	[illegible]	
Other Europeans	[illegible]	
		[illegible]
Mexicans, West Indians, & Nova Scotians		[illegible]
Total		[illegible]

NIMMO, ALEXANDER, F.R.S.E., and M.R.I.A., an eminent civil engineer, was born at Kirkcaldy, in Fifeshire, in 1783. His father, although he afterwards kept a hardware store, was originally a watchmaker. The son was educated at the grammar school at Kirkcaldy; afterwards studied for two years at the college of St Andrew's, and finally completed his studies at the college of Edinburgh. He was an excellent Greek and Latin scholar; and the higher branches of mathematics and algebra were his favourite studies. At the age of nineteen he was appointed rector of the Inverness academy, by the unanimous vote of the proprietors, after a severe contest with other candidates of no ordinary attainments, during an examination of three days. Whilst occupying this office, he was first employed in a public capacity, at the recommendation of Mr Telford, by the parliamentary commissioners for fixing and determining the boundaries of the Scottish counties. This undertaking he accomplished during the vacations, and performed it in the most able and satisfactory manner. His report, which is of considerable magnitude, is one of the most interesting documents ever published in that form. Shortly after this performance, he was again recommended by Mr Telford to the commissioners for reclaiming the bogs of Ireland. In this situation he became well acquainted with the habits and wants of the Irish peasantry, and his reports and maps of the Irish bogs were in the highest degree creditable to him. After completing the bog surveys, Mr Nimmo went to France, Germany, and Holland, and personally inspected the great works of those nations. On his return he was employed in the construction of Dunmore harbour,—a work of immense magnitude and utility, on a shore much exposed to the roll of the Atlantic, and where the depth of water at the extremity of the pier exceeds that of the Plymouth Breakwater. Mr Nimmo was employed by the Fishery Board in making surveys of the harbours of Ireland, and constructing harbours and piers all round the coast. He was also employed by the Ballast Board to make a chart of the whole coast, which was executed with great skill and accuracy. He likewise compiled a book of sailing directions of St George's Channel and the Irish coast. During the great distress in the year 1822, he was appointed engineer to the "Western District" of Ireland; and from the outlay of £167,000, up to 1830, he caused, by the improvement of land and the formation of what may be termed new settlements, no less an increase of revenue in that district than £106,000 per annum. In reviewing Mr Nimmo's professional practice, its extent and variety are calculated to excite surprise. Upwards of thirty piers or harbours on the Irish coast were built under his direction; also Perth Cawl in South Wales; he designed the Wellesley bridge and docks, at Limerick; and latterly was engaged in Lancashire, projecting a railway from Liverpool to Leeds, and also the Manchester, Bolton, and Bury railway. He was consulting engineer to the Duchy of Lancaster, the Mersey and Irwell navigation, the St Helen's and Runcorn Gap railway, the Preston and Wigan railway, and Birkenhead and Chester railway. In addition to his classical and mathematical knowledge, he was well versed in modern languages, articularly French, German, Dutch, and Italian, nd was also well acquainted with practical astro-omy, chemistry, and geology. To the last amed science he was much attached, and wrote n excellent paper, showing how it might become vailable in navigation, which was published in the Transactions of the Royal Irish Academy. He as also the author of the article on Inland Navi-ation in Brewster's Cyclopædia; also, in conjunc-on with Mr Telford, of that on Bridges, and with Mr Nicholson, of that on Carpentry. Besides these, he wrote several papers for various periodicals. His evidence on the trial, which took place between the corporation of Liverpool and the Mersey Company, is highly interesting to engineers and practical mathematicians. Lord Brougham was the counsel by whom Mr Nimmo was cross-examined; and the latter was undoubtedly the only engineer of the age who could at all have competed with his lordship's knowledge of the higher mathematics and natural philosophy, on which the whole subject in dispute depended. Mr Nimmo's death took place at Dublin, on the 20th Jan. 1832, aged 49.

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* In another document the population in 1830 is stated at 202,589.

NODULE; a round irregular shaped mass, from *nodus*, a knot. Various mineral substances are found of this shape, as flints, iron-stone, and calcareous and argillaceous nodules. The nuclei of all these is generally some organized substance, as a piece of sponge, a shell, a leaf, a fish, or the excrement of fishes or other animals called *coprolites*. These nodules appear to be formed around the central substance, by some chemical affinity between the earths or metallic matters and the decomposing animal or vegetable body. Flint nodules are very common in chalk, exhibiting a proof of the existence of quartz, in a fluid state, at the period of their formation. Ironstone nodules also abound in the coal measures, and in the old red sandstone. Calcareous nodules, inclosing fishes, are by no means uncommon in certain localities.

NORTH AMERICA, (*a*.) In the year 1837, a work was published at Copenhagen, by the Royal Society of Northern Antiquaries, in which incontestible evidence is adduced, founded on ancient Icelandic MSS., to prove that portions of North America were known to the Scandinavians five hundred years before Columbus. Traditions to this effect had long existed; but although the fact could not, or should not, tarnish the true glory of Columbus, who did not, like the Northmen, stumble upon a new world by accident, *but who went to seek, and found one*, still the general inclination of the popular mind, in the reading community, was against the reality of this Scandinavian discovery of America. Washington Irving expresses himself with distrust on the subject, although he admits that there is no great improbability, "that such enterprising and roving voyagers as the Scandinavians may have wandered to the northern shores of America, about the coast of Labrador, or the shores of Newfoundland." Messrs. Leslie, Jameson, and Murray, in their "Discovery and Adventures in the Polar Seas and Regions," reject the opinion of a visit to any part of the American coast by the Norwegians. They explain the traditions on the hypothesis, that the first discoveries of Greenland, made by the Norwegians, were in a high northern latitude, and that Vinland (the name bestowed on the discovered land) was but another and a more southern portion of the same territory. On the other hand, M. Malte-Brun entertains no doubt on the subject. After giving a brief abstract of the tradition, he adds, "to entertain a doubt of the truth of accounts so simple and probable would be an excess of scepticism; and if we admit them, it is in vain to look for Vinland, except on the coast of North America. That part of the world, then, was discovered by Europeans, five centuries before Columbus; and this discovery, the first of which there is historical proof, was not perhaps wholly unknown to the bold and skilful Genoese, who first succeeded in opening a continuous communication between the two hemispheres." M. de Humboldt, after repeating the purport of the traditions of a Norwegian discovery, with an expression of entire reliance on their general accuracy, judiciously adds: "In this class of events, as in others of a more remote antiquity, we know, so to say, the masses;—the reality of the communications between Greenland and the American continent; but the detail of the events is vague, and often in appearance extraordinary. It is only the learned of Denmark and Norway, who can remove those contradictions of dates and distances, those doubts on the direction and length of the voyages, which present themselves on the face of the spots, described in the *Sagas*." M. de Humboldt distinctly rejects the opinion that Vinland was the southern part of Greenland, which appears to have originated with Zurla; and adds, that "the colonization of this peninsula did not proceed from north to south."

Among the questions to which an answer was necessary before the truth of this tradition could be admitted, were those which relate to the Icelandic manuscripts, in which the tradition is contained. What are these manuscripts, where are they preserved, what is their age, and what their claims to authenticity, what is their exact purport, and why are they not published? A want of information on these points, was probably a chief cause of the distrust and doubts entertained on this interesting subject.

Full satisfaction on all these points, as far as it is possible to furnish it, will be found in the volume referred to.* It presents us with extracts from no less than eighteen ancient authors principally Icelandic; several, containing detailed accounts of the discovery, and all of them allusions to it. Satisfactory information of the genuineness of the manuscripts will also be found in the work, and the question will be found to reduce itself to a pretty simple issue on the credibility of the accounts themselves. Something of the reluctance to admit this discovery which haunts the popular mind, unquestionably springs from a superficial notion of the improbability that a people, locked up, as we almost think them, within the ice-bergs of the north, should have preceded the Genoese, the Venetians, the Spaniards, and Portuguese, in crossing the Atlantic. It happens, however, that at the very period when this discovery is alleged to have been made by the Northmen, and long before, they were, of all the tribes of men, precisely the people most likely to make it. Out of a little speck of a barbarous horde, not important enough to be named by Tacitus in his account of the Germans, there had sprung up, in the course of a few centuries, that bold, enterprising, warlike race, who, under a strange political organization, in which feudalism, traffic, knight-errantry, and piracy bore equal parts, covered the ocean with their commercial and their naval marine, discovered or colonized, or both, the archipelago of the North, Iceland, and Greenland, the Orkneys, the Shetland Islands, Ireland, and the main of England; all littoral Germany, the Low Countries, and the northern coast of France; ravaged the coasts of Spain and France on the Mediterranean; sacked the cities of Tuscany; wrested Apulia from the Greek emperors; made successful war with the pope and the emperor; established one dynasty in Muscovy; drove the Saracens out of Sicily, and established another dynasty there; defeated, in Epirus, the last powerful armies which were raised by the degenerate empire of the East; overran Greece, and carried terror to the walls of Constantinople. Naval skill, experience, and power were the foundation of this ubiquitous dominion. The vessels of the Northmen were [illegible], built of the most durable timber; were constructed with covered decks; and their seamen were the first who learned the art of sailing on a wind. The sea was their home. When the head of a family died, it is said that his sons cast lots for the inheritance. He that gained the lot occupied the paternal estate; for the rest of the sons,

> "Their march was on the mountain wave,
> Their home was on the deep."

They were among the last of the inhabitants of Europe who embraced the Christian religion; and their barbarous faith, their ruthless mode of warfare, and their professed contempt of the laws of nations, which were respected by the population of Christendom, made the names of the Vikingers terrible in the ears of the civilized world. The period assigned for the discovery of the American coast by their navigators, was perhaps that at which their power was at its height of development. The cold and cheerless sea which stretches from the Arctic coast of America to Norway, and the entire expanse of the Atlantic, with its accompanying islands down to the Azores, was one great theatre of their activity. The discovery of America is supposed to have taken place in the year [illegible]. This was but a century after Rollo made the conquest of Normandy; in 1060, we find one Norman prince established in Apulia; and six years after, another conquers England, and founds the present line of British sovereigns. It is plain that no achievement of naval adventure, related of such a people, can be considered beyond the line of probability.

The Northmen, though before their conversion to Christianity a barbarous, were by no means an illiterate people; and after their conversion, and adoption of the alphabet of the Christian nations, they became rapidly a reading and a writing people. They were not, indeed, unacquainted with letters, before they were taught the Roman alphabet by the priests; but it does not appear that the ancient Runic characters were used for any other purpose than inscriptions. But a strong poetical taste and a passion for traditionary and mythical lore, pervaded the northern race. The order of Skalds, or poets, was the immediate depository of the national traditions. They were treated with great consideration, both on account of their office and their rank, for they were of the noble and powerful families. Those of the class who distinguished themselves for their genius, became the friends and confidential advisers of the kings and earls. They were entertained at court in time of peace, and in battle were stationed where they could witness the exploits which they were to commemorate. In other words, they had the privilege of a position in the hottest of the battle. The existence of this class of men gave a peculiar character to the literature of the North. In the south of Europe, at this period, literature was almost a monopoly of the clergy, and every thing was written in the Latin language. As necessary consequence, most of the writings of that day abound in monkish legends and what was still more unfavourable to the growth of a vernacular literature, they were a dead letter to the mass of the people. The Skalds were men of the world;—warriors, rovers, chieftains, they mingled in the stir of life; they were trained, not within the cloister, but in the open air of the mountains and the vales, and amidst the wild creations of Arctic nature. After the convulsions of continental Scandinavia, Iceland was their favourite seat, the home of stout-hearted refugees, who made this poor frozen rock the abode of traditionary lore and song. Nature, with a kind of caprice, in reproducing in the polar circle an Ausonian age, associated with it the romantic features of a Campanian region. Volcanoes flamed up from eternal glaciers; and fountains of boiling water spouted from snow-clad craters. The conversion of the North to Christianity was contemporary with the period to which the discovery of America is referred; and with this period commences also the reduction to writing of the mythical and traditionary lore of the Skalds. In 1056, Sæmund Sigfussen was born. The poetic, or elder Edda, was reduced by him to writing,—a collection of the mythological and historical traditions of the North. Ari the Wise was his friend and fellow-student. He composed several works, of some of which fragments are still extant. His accounts extend from the latter part of the ninth century to the beginning of the twelfth, and include the most remarkable events connected with the first settlement of Iceland, the revolutions in its government, the discovery of Greenland, and the introduction of Christianity. A work of this writer, called Landnama-Bok, contains a passage relative to the discovery of Greenland. In the next century, (in the year 1178,) Snorre Sturleson was born, whose great national history, *the Heimskringla*, is still preserved. It will appear from this brief sketch, that, at the very period at which the discovery of America is alleged to have been made by the Northmen, they were rapidly becoming a literary people; and that with the third generation from the discoverers, a series of national writers of reputation commences, whose works are still preserved, and form a satisfactory basis of authentic history.

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* The *Latin* title of the work is, *Antiquitates Americanæ, sive Scriptores Septentrionales rerum Ante-Columbianarum in America*. Mr C. C. Rafn, Secretary to the Northern Antiquaries, was editor.

In the spring of the year 986, Eric Rauda, that is, Eric the Red, emigrated from Iceland to Greenland, and formed a settlement there called *Brattalid*, at a place named from himself Ericsfiord. Among those who accompanied him was Heriulf Bardson, who established himself at a place which still bears the name of Heriulfsness. Heriulf had a son named Biarne, Biorne, or (in some modern writers) Biron. Biarne was absent on a trading voyage in Norway, when his father accompanied Eric to Greenland. Returning to Iceland in the course of the summer, and finding his father gone, he sailed in pursuit of him, though wholly ignorant of the navigation between Greenland and Iceland. His vessel was soon enveloped in fogs; and after many days' sailing, he knew not whither he had been carried. When the fog cleared up, they found themselves sailing with a south-west wind, and saw land o the left. It was without mountains, overgrown with woods, and rose in several gentle elevations. As it did not correspond with the descriptions of Greenland, the country of which they were in search, they left it to larboard, and continued sailing for two days, when they saw another land, which was flat and overgrown with wood. From thence they stood out to sea, and sailed three days with a southwest wind, when they saw a third land, which was high and mountainous, and covered with glaciers. Coasting along its shore, they discovered that it was an island. They bore away from it without landing, and after four days' sailing with fresh gales, reached Heriulfsness in Greenland. Such is the tradition of Biarne's voyage in 986. If it be considered as authentic, we must suppose, that on sailing from Iceland for Greenland, he was carried by a northeast wind and currents far to the south, till he struck the coast of America; and thence, with an opposite wind, stretched along the shores of Newfoundland and Labrador, till he reached his place of destination in Greenland. Biarne is stated not to have landed on the continent of America.

Some time after this, probably in 994, Biarne made a visit to Eric, earl of Norway; and gave him an account of his voyage, and of the unknown land he had seen. He was censured by the earl for not having explored the region. On his return to Greenland, a voyage of exploration was determined upon. Leif, a son of Eric the Red, for this purpose bought Biarne's ship, and put on board a crew of twenty-five men, among whom was a German named Tyrker, who had been long attached to the family of Eric. They sailed in the year 1000, and came first to the land which had been last discovered by Biarne. Here they landed. No grass was visible; the shore was lined with icebergs; and the intermediate space between them and the water, was one continuous stratum of slate. This substance is called *Hella* in the Icelandic tongue, and hence the region was named Helluland. In the Copenhagen publication this is supposed to have been Newfoundland, on the ground of the length of time,—four days,—passed by Biarne in the first-named voyage, in sailing from this spot to Greenland; but the described features of the country correspond more nearly with those of Labrador.

They put out to sea from Helluland, and descried another land, where they also went on shore. It was level, covered with wood, and presented a front of white sand bluffs. This they called Markland, or Woodland. This is supposed to have been the coast of Nova Scotia. Again, standing out to sea, they sailed for two days, with a northeast wind, before they saw land again. They then came to an island east of the main, and entered a channel between this island and a promontory projecting in an easterly (or northerly) direction from the main land. They sailed westward; there was much land left dry at ebb-tide. Afterwards they went on shore at a place, where a river, issuing from a lake, fell into the sea. They brought their ship into the river,—thence into the lake,—and there anchored. Here they first constructed temporary huts; but having determined to pass the winter, they erected more permanent buildings, which they called Leifsbuthir, Leif's booths, or huts. Thus established, Leif divided his company into two parties, whose business it was, alternately to watch the settlements, and to explore the country. Upon one occasion the German, Tyrker, failed to return at night, with the exploring party to which he was attached. When at length he came back, he reported that, in his wanderings, he had seen abundance of grapes, with which he was well acquainted in his native land. From this circumstance Leif gave the name of Vinland, or Wineland, to the country. After passing the winter at this spot, Leif and his party returned to Greenland in the spring. The island just alluded to is supposed to have been Nantucket, and the region called Vinland the States of Massachusetts and Rhode Island.

On his return to Greenland, Leif's discovery was the object of much inquiry; and Thorwald, his brother, borrowing Leif's vessel, undertook another voyage in the same direction, in the year 1002, determined to explore the country further in a southern direction. They reached Vinland before winter, which they passed at Leif's booths, employing themselves in fishing. In the spring of 1003, a party was sent by Thorwald, in the ship's long boat, to explore the country to the south. They passed the summer in this employment, and found the country beautiful and well wooded, with a narrow belt of sand between the forest and the sea. They also encountered many shallows and islands. They found no traces of men, except a shed upon an island lying to the westward.

In the spring of 1004, Thorwald sailed out to the eastward, in the large ship, and then northward past a remarkable headland, enclosing a bay, and which was opposite to another headland. They called this Cape Kiarlaness, or the Keel-Cape. Doubling this cape, they skirted the shores, and crossed the inlets, till they came to a projecting promontory, covered with wood. This spot charmed Thorwald; he exclaimed, "This is a beautiful spot, and here I should like to fix my dwelling." As they were preparing to go on board, they noticed three canoes on the beach, and under each canoe three *Skrællings* or dwarfs, which is the name given by the Northmen to the Esquimaux. A contest ensued, and eight of the nine Skrællings were killed. The ninth fled into the interior of the bay, from which he soon returned with a vast number of his countrymen. The party of Thorwald retreated to their vessel, and sheltered themselves behind its bulwarks; but Thorwald himself was mortally wounded by an arrow under his arm. Perceiving his wound to be fatal, he said to his companions, "I now advise you to prepare for your departure as soon as possible, but me ye shall bring to the promontory, where I thought it good to dwell. It may be that it was a prophetic word that fell from my mouth, about abiding there for a season. There shall ye bury me and plant a cross at my head, and also at my feet, and call the place KROSSANESS, in all coming time." They obeyed this command. Returning to Leif's booths, they passed the winter there, and the following spring went back to Greenland. The Keel Cape is supposed to be Cape Cod; and the promontory called Krossaness, from the fate of Thorwald, to be either the Gurnet opposite Plymouth, or Point Alderton in Boston harbour.

In the season following these events, Thornstein, the third son of Eric, embarked, with his wife Gudrida, in search of the body of Thorwald, which they wished to bring back to Greenland. The voyage was unsuccessful. They were tossed about all summer, and knew not whither they were driven. It was winter before they made the western coast of Greenland, where Thornstein died. In the spring Gudrida his wife returned to the family seat, at Ericsfiord.

The following year, 1006, is of importance in the history of these expeditions. In the summer of this year, there arrived in Greenland two ships from Iceland. The one was commanded by Thorfinn, surnamed *Karlsefne*, that is, the Hopeful, a wealthy and powerful personage of illustrious lineage, descended from Danish, Norwegian, Swedish, Irish, and Scottish ancestors, some of whom were of royal rank. The other ship was commanded by Biarne Grimolfson and Thorhall Gamlason. They kept the festival of Yule (Christmas) at Ericsfiord. Here Thorfinn became enamoured of Gudrida and espoused her in the course of the winter. The discoveries in Vinland were the great subject of interest in the family of Eric. Thorfinn was urged by his wife and the other members of the family to undertake a voyage to the newly discovered country. Accordingly, in the spring of 1007, he and his associates embarked in their two vessels; and a third ship, commanded by Thorward (who had married Freydisa, a natural daughter of Eric), was joined to the expedition. The party consisted in the whole of 160 men. They took with them all kinds of live stock, intending if possible to colonize the country. They touched at Halluland on their way southward, and found many foxes there. Markland also they found stocked with wild animals. Proceeding southward they made Kiarlaness (Cape Cod), and passed trackless deserts, and long tracts of sandy beach, which they called Furdustrandir. They continued their course, until they came to a place where a frith penetrated far into the country. Off the mouth of it was an island, past which there ran strong currents, which was also the case further up the frith. On the island there were an immense number of eyder-ducks, so that it was scarcely possible to walk, without treading on their eggs. They called the island Straumey (stream-isle), and the frith, Straumsfiord (stream-frith); and on its shores they landed and made preparations for a winter's residence. They found the country extremely beautiful, and set themselves to explore it in all directions.

Thorhall, with a party of eight men, took a course northward in search of the settlement of Leif at Vinland, but they were driven by contrary gales to the coast of Ireland and there made slaves. Thorfinn, with the rest of the company, in all 151 men, sailed southward, and arrived at a place where a river falls into the sea from a lake. Opposite to the mouth of the river were large islands. They steered into the lake and called the place *Hop*. On the low grounds they found fields covered with wheat growing wild, and on the rising grounds vines. Here they were visited by great numbers of the natives in canoes. These people are described as sallow-coloured, ill-looking, with unsightly heads of hair, large eyes, and broad cheeks. Thorfinn and his company erected their houses a little above the bay and passed the winter there. No snow fell, and the cattle found their food in the open field. In the following spring, 1008, the natives began to assemble in numbers, and opened a trade with the strangers. The articles exchanged were furs on the one side, and strips of cloth on the other. In the course of the season, Gudrida, the wife of Thorfinn, gave birth to a son, who was called Snorre, and who was the first child, of European descent, born in America, and the ancestor of many distinguished personages at the present day, whose [illegible] according to the genealogical tables appended to the volume referred to, is lineally traced to Thorfinn and Gudrida. Among these we may mention professor Finn Magnussen, a native Icelander, now established at Copenhagen, one of the most distinguished Icelandic *savans* of the day, and Thorwaldsen, the great sculptor. After other adventures and contests with the natives, which are related with great particularity, Thorfinn returned with his party to Greenland. After a few years spent there, he purchased an estate in Iceland, in 1015, where he passed the rest of his life, as did Snorre, his American born son. After the death of Thorfinn, and the marriage of her son, Gudrida made a pilgrimage to Rome. The family remained distinguished for wealth, influence, and intelligence. Thorlak, the grandson of Snorre, was raised to the episcopal rank, and was of great repute for his learning. He compiled a code of the ecclesiastical law of Iceland, which is still extant; and is very likely to have been the person who committed to writing the *Sagas*, or traditions of the voyages and adventures, of which we have given a brief abstract.

In the year 1011, another voyage was made to Vinland by Helge and Finnboge, two brothers from Iceland, who were joined by Thorward and his wife Freydisa; but our limits oblige us to omit the tragical incidents of the expedition. It may be observed here, that the *Straumey* of the preceding voyages is supposed by the editor of the *Antiquitates* to be Martha's vineyard; *Straumfirth* to be Buzzard's Bay; and *Hop* to correspond with mount Hope Bay, the seat of king Philip.

For the residue of the eleventh century there are no accounts of voyages from Greenland to the newly discovered region. It is matter of conjecture only, that a continuous communication was kept up. In the year 1121, bishop Eric of Greenland embarked on a missionary voyage to Vinland, of which the result is not known. In 1285, a new land west of Iceland is said to have been discovered by two missionaries from that island. This new land is supposed to have been Newfoundland; and mention is made of a voyage from Greenland to Markland as late as 1347.

Such is the purport of the historical evidence contained in the volume referred to of the early discovery of America by the Northmen. We have retained many particularities of detail of little intrinsic importance, as they form a striking characteristic of the narrative, and contribute essentially to the means of judging of its authenticity. About one half of the volume consists of two narratives, which constitute the two most important chapters of the work. The first may be called the history of Eric, the first settler of Greenland, and the second, which is a longer performance, is the history of Thorfinn the Hopeful, who conducted the most important expedition to Vinland.

We have already observed, that the great fact asserted in these Icelandic accounts, is in itself in no degree improbable. That the greatest navigating people, who, before the invention of the mariner's compass, traversed the ocean, and who are known to have visited every part of the North sea, should, in their voyages to Iceland, Greenland, and Ireland, have been carried by northeastern winds to the coast of North America, is so far from being unlikely, that it is almost impossible it should not have taken place. With the settlement of Greenland the first step, of course, was taken toward the discovery of the American continent. If not a part of that continent, it is separated from it only by a narrow arm of the sea. Ten degrees of latitude, on the coast of Labrador, lie within a radius of 650 miles from Cape Farewell. The distance from the same cape to Newfoundland is not greater than that from Iceland to Greenland; from Norway to Iceland; or from Norway to the northwestern coasts of England. To pilots, accustomed to make the last-named voyages, and in strong and substantial vessels, such as we know were built by the Scandinavian shipwrights, (whose mythic prototype, Volundr, was deemed, by the enthusiasm of a simple age, to be endowed with more than mortal skill,) there is, certainly, nothing extraordinary or formidable, in running down from Cape Farewell in Greenland to Newfoundland.

The ancient accounts of these voyages contain nothing which, when rightly considered, ought to impair their substantial credibility on the score of extravagance. They present many of the characteristics of the legendary tales of rude ages; of the narratives of credulous mariners, relating their exploits in distant and newly-discovered countries. The German, Tyrker, whose discovery of the grape gave the name of Winland to the region, is represented as having lost his way from the exhilarating effect of the fruit which he had eaten, and recovering himself but slowly on his return. In the image of a German sea-rover intoxicated with eating fox grapes, there is indeed a ludicrous extravagance. So, too, the savage who shot Thorwald, is described as a one-legged animal, a phenomenon which awakens a burst of poetical admiration on the part of one of the company. On the death of Thornstein, in Greenland, while his wife, Gudrida, is holding the lyke-wake, the dead body enters into a conversation with her, and relates her future fortunes in the style of the epic visions of Greece and Rome. These are the ornaments, with which a traditionary tale is clothed by minstrels and rhapsodists; they are the superstitions of a credulous age; they are the romantic creations of weather-beaten mariners, sitting with their skinny-handed cronies, around a drift-wood fire, for the live-long Arctic night, and rehearsing the wonders of the sea. Rude but vigorous fancy redeems the frozen and homely poverty of real life. The poor seaman's cabin, excavated under the comfortable lee of a glacier, one half sunk into a frozen soil, the other covered with eternal snow, warms and flashes up with a strange pageantry. Its inmates have seen spirits dancing on the northern lights; they have beheld wild eyes glaring out of the ice-blink; have looked, with amazement, at the sea serpent, as he curls up and overtops the mainmast; have cast their anchor into the small ribs of the kraken; and, losing their way, have wandered into that dreadful Hafgerding, or place in mid ocean, where the waters rise up like mountains, on the three sides of a dreary plain, from which there is no escape to the astonished mariner. Regarding the age and the region, in which these Icelandic traditions must have circulated for two or three generations, we think they have suffered less than could have been expected from the credulity and extravagance, the superstition and the ignorance, of their narrators.

With regard to matters of a different kind, it must be admitted that there are some points, in which the traditions are inexact. The descriptions of the winters of Vinland certainly do not apply to the winters experienced in modern days in that portion of North America. "Such is the goodness of the land, (says Leif, the son of Eric,) as to show that the flocks had no need of pasture; for there were no wintry frosts, and the grass scarce withered." It may, however, be deemed a sufficient explanation of this difficulty, that to persons used to the climate of Iceland and Greenland, the ordinary winter of Massachusetts and Rhode Island would seem mild; and the cattle of the former region, when brought to the latter, might be capable, even before the introduction of artificial pasturage by agriculture, of subsisting themselves by browsing, like the moose and the deer at the present day.

The manner in which these accounts have been transmitted to us, though not *omni exceptione major*, is, upon the whole, satisfactory. Of the authenticity of the manuscripts there is not a shadow of doubt; of the age of some of them there is no question. These manuscripts carry back the record to the fourteenth, and even the thirteenth century. The substantial agreement of the accounts in one main tradition, and their difference in circumstantial details, are a sufficient warrant, that they were not, when produced, a wholesale fabrication. We have every reason to believe, from internal evidence, that the accounts contained in the existing manuscripts were faithfully compiled from older documents; from the metrical *Sagas;* and from traditions orally handed down in the families of the discoverers.

That such a discovery should have been made; so vast, so interesting; that expeditions to explore, to settle, and to evangelize the country should have been undertaken; and that a communication between America on the one hand, and Greenland and Iceland on the other, should have been kept up for three centuries and a half; that written accounts of these very important events should be in existence; and that the discovery should have been pushed to no greater consequences; nay, that all effective knowledge of it, after a time, should have perished; are, it must be admitted, circumstances somewhat difficult to explain. If it be hard to find a continent, one would think it must be much harder to lose one. When America was discovered by Columbus, the intelligence rung round Europe. The old world seemed to pour itself out upon the new. The discovery by the Northmen, to use a modern phrase, seemed, as far as we can judge, to produce no sensation in the world. It had no effect upon the mind of Europe at large. It led to no vigorous efforts at colonization; awoke no spirit of adventure; occasioned none of those mighty revolutions, which were caused by the discovery of Columbus; and was before long forgotten. These are difficulties which must be looked in the face.

Are they sufficiently accounted for by the want of the art of printing; by the less extensive prevalence of knowledge; and by the comparative barbarism of the eleventh and twelfth centuries, as contrasted with the kindling intelligence of the beginning of the sixteenth? Was the attention of the ardent spirits called forth in other quarters; to the revolutions that were advancing under Norman banners in Apulia and in Sicily; to the magnificent conquest of England by a Norman prince; and, above all, to the great movement of the crusades, which shook Europe to its centre? Again, the Spanish discoverers, on the first islands, and first portions of the continent which they visited, found the precious metals in abundance. This discovery urged the passion for adventure to madness. Gold and silver were found in heaps. The tale went home of rivers, that flowed over beds of golden sand, of temples, whose walls blazed with the precious mischief; of captive princes, purchasing their ransom by halls full of piled ingots. This turned the heads of men in the old country. They grew frantic to get at this gold; and it soon became necessary, in order to avoid the depopulation of Spain, that severe restrictions should be laid on emigration. But avarice was not the only master-passion, which was enkindled. The Spanish adventurers encountered at the outset a delicious tropical climate, a region inhabited by races which, compared with themselves, were unwarlike and timid,—whose civilization had furnished many of the arts of luxury and gaudy display, few of those of defence, at least against a mounted, iron-clad enemy, who fought with thunderbolts. Ambition was fired at the thought of achieving the conquest of vast realms, by a trifling expense of the resources of European warfare. The career of the Cortez and Pizarro was enough to ruin a generation of young men,—to corrupt the imaginations, and unsettle the judgments of men for a century. Far otherwise the case with the Northmen. They landed, at best, on an inhospitable coast; inhabited by a warlike race of savages; they themselves had no fire-arms, and the country, and those who occupied it, offered little to awaken either ambition or avarice. At a much later period, we witness the effect of this diversity in the character of the two portions of the continent, upon the conduct both of governments and individuals. Newfoundland, we know certainly, was discovered by Cabot, for England, a few years after the West Indies were discovered by Columbus for Spain. And yet, though the example of Spain, in turning her almost undivided attention to her new American acquisitions, was before the eyes of England, she neglected hers for three quarters of a century, and, at last, did little more than extend a parsimonious countenance to the feeble attempts of private companies to colonize the continent.

NORWAY, (*a*.) By the last census of Norway, taken in 1835, the total number of inhabitants was 1,194,827. In 1825 it was 1,051,318, or, according to other statements, 1,050,132; the increase, therefore, during 10 years was 13·6 per cent., or about 1⅓ per cent. annually. The total population in 1835 consisted of 585,381 males, and [illegible] females; the ratio of the two sexes being as [illegible] to 104. The rural population in the same year amounted to 1,065,825, of whom [illegible] were males, and 541,903 females, being in the proportion of 100 to 103. The population of the towns was 129,002, of whom 61,459 were males, and [illegible] were females, their relative proportion being [illegible] to 109. In 1825 the rural population was [illegible], and the population of the towns 115,[illegible]; consequently, the increase of the former during the 10 years was 14 per cent., and of the latter only [illegible] per cent.

The number of considerable towns in Norway is small, regarding as such every town with more than 3000 inhabitants. There are not more than 11 towns in this class, the population of which will be seen in the following table.—

TOWNS.	1825.	1835.			
	Total.	Males.	Females.	Total.	Paupers.
Christiania,	19,061	11,625	11,496	23,121	673
Bergen, .	20,844	10,665	12,174	22,839	831
Drontheim,	11,639	5,693	6,665	12,358	568
Christianssand,	7,486	3,615	4,050	7,665	370
Drammen, .	6,933	3,470	3,780	7,250	317
Frederikshald,	4,612	2 476	2,445	4,921	160
Stavanger.	3,777	2,256	2,601	4,857	123
Konigsberg,	3,691	1,625	1,915	3,540	324
Laurvig, .	3,106	1,600	1.813	3.413	123
Moss, . .	2,863	1,589	1,688	3,277	166
Arendal, .	3,202	1,450	1,779	3,229	138

From this we see that Christiania, the new metropolis of Norway, which in 1825 contained nearly 1,800 inhabitants less than Bergen, now contains nearly 300 more than that old, and once so celebrated town, in which it will also be observed, the paupers are considerably more numerous than in Christiania. Stavanger appears to have increased in population more than any other of these towns. Konigsberg, notwithstanding the wonderful increase which has occurred in the produce of its silver mine during the last 10 years, is one of the very few towns in Norway the population of which has decreased during that period. Here, too, the number of paupers is very great, being as numerous as in Drammen, where the population is twice as great. These remarkable facts indicate a change of the ancient seats of welfare in Norway.

In towns the proportion of females to males is as 109 to 100. In two or three of the towns this proportion is much smaller; and in Christiania and Frederikshald, the males exceed the females; but this must be owing to the military quartered in those places; for while in all the towns the number of married persons of both sexes is nearly equal, and in Bergen and most of the towns there is an excess of females among unmarried persons: in Christiania and Frederikshald, on the other hand, there is a large excess of unmarried males.

That the number of unmarried people of each sex should be in proportion to the total number of males and females respectively, would appear a very natural conclusion; but it appears that in Norway the number of unmarried males was 375,771, whilst that of females was only 373,728. But, on the other hand, the number of widows, 42,660, greatly exceed that of widowers, 16,625. If even a small portion of the excess consist of widows of a marriageable age, the natural proportion of the two sexes is restored. The fact itself admits of an easy explanation. The greatest number of unmarried persons are necessarily under 20 years of age, especially in a northern climate, where marriage seldom occurs under that age; and in this period of life the males predominate considerably. During the next 10 years, from 20 to 30, the females are slightly in excess, during which time more females will be married than males, who usually marry somewhat later in life. In the 20 years following the numbers are nearly equal. After 50, when the greater part of those of both sexes who are able to marry are already married, the proportion of females exceeds considerably that of males; but a great portion of this excess must consist of widows, not unmarried women; so that the sum of unmarried males, at all ages, would necessarily be somewhat greater than that of unmarried females. The excess of widows, as compared with widowers, is obviously caused chiefly by the greater mortality among men, which the tables attest, there being 116 women to 100 men alive beyond the age of 50, and the proportion increasing with each decennary period, viz., 123 to 100, beyond 60; 132 to 100, beyond 70; and 139 to 100, beyond 80 years of age.

With regard to the occupations of the population, Norway is essentially an agricultural country. Hence, among the total male population of 585,381 persons, of whom 434,267 are above 10 years of age, 158,405 are cultivators of the land, to which, as connected with agriculture, must be added a large portion of the journeymen and servants; 28,903 arc engaged in navigation and the fisheries; 23,145 in commerce and manufactures; which number, however, may exceed that of seamen by the addition of a portion of the journeymen; 139,954 are classed as servants, of whom 124,627 belong to the country, and consequently especially to agriculture, and 15,327 to towns; 1,992 are officers, 2,104 are pensioners, and 30,697, or more than 5 per cent. of the male population, are paupers—4,720 being inhabitants of towns, and 25,977 belonging to the country.

In order to encourage cultivation in a country where the products of the soil are gathered only by a difficult and toilsome labour, the government of Norway has judged fit to free newly-cultivated land from taxes for a considerable space of time. Therefore, the cultivators of land are divided into two classes, taxed and not taxed. Of the former, there are 103,192; and of the latter, 55,213. The former are again subdivided into proprietors or freeholders, possessing what is called the *odels-ret*, of whom there are 72,624; and those with a limited possession, a right of use, or farm, of which class there are 30,568.

O

OCEANIA, (*a.* to *Oceanica.*) The name *Oceania* has been bestowed by modern geographers on that large region of the globe, which comprises all the islands in the Pacific ocean to the south and south-east of Asia, including the Asiatic archipelago, Australia, and Polynesia. This region extends from about the ninety-fifth degree of east to the 110th degree of west longitude, and from the twenty-fifth of north to the fiftieth of south latitude. Within these limits, stretching 10,000 miles in every direction, we have a vast ocean, with a profusion of islands scattered over it, one of them rather a continent than an island; five or six more, each equal in magnitude to almost any in the world; and one peninsula of great size. The great mass of the land lies between the 95th and the 106th degree of east longitude. Beyond the tropics, we have about two-thirds of Australia and the whole of New Zealand. All the rest of this region is strictly tropical, and by far the larger portion of it lies within ten degrees of each side of the equator. The total superficies of the land has been estimated at 3,100,000 geographical square miles, making this division of the globe therefore larger than Europe, although greatly smaller than Asia, Africa or America. A more distinct notion, however, will be conveyed to the reader by giving the superficies of a few of the principal countries composing it, as follow:—

Australia	1,496,000 square miles
Malayan Peninsula	48,000
Sumatra	130,000
Borneo	212,500
Java	50,000
Celebes	55,000
New Guinea	213,300
Mindanao	25,000
Luconia	30,600
New Zealand	150,000
	2,410,400

Besides these, nearly 100,000 square miles may be added for many considerable islands, varying in size from 1000 to 9000 square miles; so that the total area, exclusive of a vast multitude of isles and islets, which not only cannot be measured, but cannot even be counted, will be upwards of two millions and a half of square miles. Here are countries, then, greater in extent than China and Hindostan put together. Australia itself is more extensive than the Chinese empire; Borneo three times the size of Great Britain; Sumatra larger than Great Britain and Ireland put together; while Luconia, the principal of the Philippines, is equal in size to the last named island.

M. Balbi, in his geographical description of Oceania, has, with considerable success, classed it into three great divisions, viz. Malaisia, Australia, and Polynesia; and each of these he has described by groups and archipelagoes, selecting generally a principal island to distinguish the name of each, as the Group of Sumatra, the Group of Celebes, &c. Of these there are no less than forty-five, necessarily of very unequal magnitude and importance.

The geological formation of lands so extensive, so scattered, and so widely spread, is, of course, exceedingly various; but the primitive, and trap or volcanic formations prevail. To the first belong the Malayan peninsula, Borneo and Celebes. In those where granite is the principal rock, gold abounds; while the Malayan peninsula, with some islands adjacent to it, contains, besides that metal, the richest and most extensive tin formation in the world. The basaltic, or volcanic formation embraces the whole chain of islands from Java to Sumbawa inclusive, and comprehends most of the islands lying between Celebes and Papua, famous for the production of the clove and nutmeg. The basaltic islands are remarkably deficient in metals, but are more than compensated for it, in the majority of cases, by an incomparable fertility of soil. Of the mixed primitive and volcanic formations are composed the island of Sumatra, and the principal islands of the Philippine group. In these, gold is found, but less abundantly than in the countries of purely primitive formation; but they are at the same time of a soil more fertile. Australia, as might be expected from so extensive a country, comprises almost every variety of geological formation, primitive, secondary and volcanic. It abounds in mineral coal, which is also to be found in Sumatra, Java, and some of the smaller islands. The diamond is found in Borneo only. Copper is found, but not wrought, in Sumatra, Luconia and Timor. Lead is found in Luconia; and perhaps the most abundant ore of antimony in the world, and which now supplies the European market, is found in Borneo. Compared with other countries, iron may be considered as scantily produced every where, but particularly in the volcanic islands. Enough has never been produced for the consumption of the inhabitants, and this metal is, therefore, largely imported.

Even in Australia, contrary to what might be expected, there are no rivers of long course, or of great magnitude; and the smaller islands are of course deficient in them. Number, however, in some degree, makes up for the want of size. The high mountains of those within the torrid zone pour down a perennial and abundant supply of water, and there are no countries in the world consequently less subject to drought than these.

No region more abounds in mountains. The highest are found on Sumatra, Java, and some of the islands immediately to the eastward of the latter. These are of an elevation varying from ten to fifteen thousand feet. A great many of them are volcanoes, of which Java is thought to count not less than fifteen, Luconia four, and Sumatra five. The eruptions of some of these, even in our times, have altered the very face of the lands in which they exist, and been accompanied by a vast destruction of life and property.

With the exception of New Zealand and the larger portion of Australia, which enjoys a temperate climate, the rest of Oceania is in the torrid zone; but the climate is tempered by a rich covering of vegetation, frequent and abundant rains, and the insular character of the whole region. A portion of Australia alone is within the region of variable winds; the rest within the influence of the trade-winds, or monsoons. From Sumatra to New Guinea, and even thirty degrees further east, although more uncertain, the latter extend. To the north of the equator, the wind blows half the year from the south-west, and half the year from the north-east, uninterruptedly; and to the south of the equator, half of the year from the north-west, and the remainder of the year from the south-east. In these tropical regions the season of constant rain generally does not exceed three months. Here the distinctions of summer and winter, of spring and autumn, and the changes in the vegetable creation, by no means however very distinct, alone proclaim a change of season.

Of the varied vegetable productions of these countries it would be in vain to attempt even the barest outline. The greater portion of the country is, down to the present day, unaltered by the industry of man, and as it came from the hand of nature, covered with primeval forests of rich foliage, with very trifling exceptions, in one uniform and perpetual verdure. The useful vegetable products of these islands, indigenous or exotic, are numerous and various. Some of the most indigenous plants of the greatest utility, are rice, a variety of palms, but chiefly the cocoa-nut, the sugar-cane, the clove, the nutmeg; and among fruits, several cucurbitaceous plants, the bread-fruit, the banana, the delicate mangosteen, perhaps the most exquisite of known fruits, and the durian, unquestionably the most rich and luscious. Among exotics, but long and thoroughly naturalized, may be named many pulses, maize, cotton, pepper, coffee, tobacco, the mango, and the pine-apple.

Animal life is nearly as vigorous and varied as even the vegetable. In the tropical portion of Oceania the greater animals are confined to the greater islands. The elephant, of the same species as the common Asiatic, is known only on the Peninsula, Sumatra, and a small portion of the north-east part of Borneo. Two species of rhinoceros, distinct from those of Africa and Asia, are confined to the Malayan peninsula, Sumatra, Borneo and Java; and the two first named afford the tapir, an animal of the same family, and long supposed to be peculiar to the American continent. The tiger is never found in these countries in any small island, even when that island is in the immediate vicinity of a large one abounding with it. This animal, and many others of the feline tribe, abound in all the large islands to the westward, but seem to disappear as we advance to the eastward. In the forests of the great islands also are to be found the wild ox and buffalo, the originals of those that have been domesticated. Deer are found chiefly in the great islands, and these of many varieties, differing in size from considerably smaller than an ordinary rabbit, up to that of the elk. The hog is nearly universal, and as abundant as it is widely spread. When we get into the Moluccas and approach the shores of New Guinea, we find a remarkable species of this animal, to all appearance equally partaking of the hog and the deer, and justly called by the natives the Babirusa, or hog-deer, of which this is the literal interpretation. The number and variety of the monkey tribe, all, or almost all, differing in species from the same family in Europe, Asia, Africa and America, is prodigious; and they are almost as widely disseminated as they are various and numerous. The Ourang-outang, or man of the forest, so called by the natives themselves, seems confined to Borneo and Sumatra. Notwithstanding a certain resemblance to the human form, this is one of the dullest and least intelligent of the race. The feathered tribe becomes the more remarkable as we proceed eastward. Here they are of singular forms, and their plumage is of resplendent beauty. It is here we find the most remarkable of the parrot family, the louris, and the cockatoos, names that are slight corruptions of native terms. Here are to be found the whole family of the birds of paradise, and the magnificent crown-pigeon, nearly equal in size to the American turkey. Here also the kangaroo begins first to present itself. In the narrow and temperate seas of this region it may be expected that fish should abound, and this is found to be the case, particularly where extensive banks exist, as the Straits of Malacca, a kind of Mediterranean sea; the northern coast of Java; the shallow bays which indent the Celebes, and the group of the Philippines. A few of these fish are not inferior in flavour to the best of the northern seas. Seals do not present themselves till we get beyond the tropics; and whales are comparatively rare within the equatorial region. The cod, the herring, and the salmon, so familiar to Europeans, are unknown. The abundance of fish, and the facility of taking them, has rendered the fisher, instead of the hunter state, the prevailing condition of most of the rude tribes.

To the sketch now drawn, the zoology of the South Sea Islands, and especially of Australia, offers well known exceptions. Animal life is there comparatively scanty in amount, and the few which exist, although singular for their forms, are for the most part mean and low in the scale of beings, as compared to the lower animals of the longer known portions of the globe.

M. Balbi, who has furnished a table of the population of Oceania, makes it amount to 20,300,000, being at the rate of 6½ to the square mile; this, he observes, makes it twice as populous as America, and nearly as much so as Africa, but only one-fourth part as populous as Asia, and one-tenth part as Europe. We are disposed, however, to consider this estimate as greatly beyond the mark. The English population of Australia, and of our settlements in the straits of Malacca, together with that of Java, and of the Spanish portion of the Philippines, are all that have been ascertained by actual enumeration. The population of the British possessions is above 150,000; that of Java six millions; and that of the Spanish possessions nearly as M. Balbi has given it, or 2,640,000. This makes in all 8,790,000, or under nine millions. The countries thus stated are by far the most populous; Java gives a ratio of 120 to the square mile; and Luconia, which has a million and a half of inhabitants, gives near 50. These are the only countries that in reality have a considerable population,—from whence then are to come the eleven millions and a half, wanting to complete M. Balbi's number? The only other countries of considerable extent which are tolerably populous are Sumatra and Celebes; as the greater part of these are still covered with forests, if we reckon them as being equal in ratio to one half of that of Luconia, they will give us an addition of 4,625,000, which will raise the whole to 13,415,000. Borneo is, with the exception of a patch here and there at the mouth of a navigable river, either in a state of nature, or sprinkled with a population of savages, less numerous than the apes in their own forests. The Malayan Peninsula, and the great island of Mindanao, are pretty nearly in the same predicament. A few of the smaller islands, as those of the Lubeck group, Amboyna, and Ternate, are tolerably well peopled. If we give, in short, a million and a half to the whole of which we have not attempted a separate estimate, we shall make the total population of this region amount to fifteen millions, which is unquestionably its utmost extent, and there will be a necessity for curtailing M. Balbi's estimate by at least five millions.

The native inhabitants of Oceania consist of two, indeed most probably of three, distinct races of men. The first and most important of these, both in numbers and civilization, is a yellow or brown complexioned race, with long lank hair, scanty beards, high cheek bones, large mouths, and short noses, with wide nostrils. In their persons they are squat, somewhat robust, and deficient in agility. Their general stature is greatly less than that of Europeans, and also much below that of the Chinese, of most of the Hindoo nations, the Turks of Asia, and the Persians. They are even shorter than the Birmans and Siamese, whom they most resemble. This race constitutes the entire native population of Sumatra, Java, Borneo, Celebes, and the greater number of the South Sea Islands, and forms the great mass of the population of the Malayan peninsula, the Philippine islands, the Moluccas, &c.

The second race are negroes, and Mr Marsden very properly adopts for them the name of *Negritos*, or little negroes. Although negroes, however, they are a totally different race from any of the negroes of Africa. They have thick lips, flat noses, a sooty complexion, and wool-like hair. In their persons they are smaller and slenderer than the yellow race, and upon the whole are among the most diminutive, puny, and ill-favoured of the human species. They present themselves for the first time, (unless we except the inhabitants of the Andaman islands, in the Gulf of Bengal, which seem to be precisely the same people,) in a few scattered families or tribes in the mountains of the Malay peninsula. In Sumatra, Java, Borneo, and Celebes, they are not ascertained to exist, although this has been sometimes vaguely asserted to be the case. They appear for the first time, in considerable numbers, in the Philippine group, as wandering savages in the mountains of the principal islands, and constituting the entire population of some of the smaller. In the great island of New Guinea, they appear to constitute the mass of the population, such as it is, and here for the first time they are seen with some approach to civilization. The same race constitutes the population of almost all the islands from New Guinea to the Feejees inclusive, extending over fifty degrees of longitude. The yellow complexioned race, then, once more appears, and occupies all the islands to the east, north, and south, except New Holland and Van Dieman's Land, which are peopled by the Negritos.

The third race has been considered as the result of the admixture of the yellow and negrito races. But for making this assumption, there appears no justifiable ground. In this race, the lips are thick, the hair not woolly or lank, but crisp and curled, and the complexion darker than that of the first, but less intense than in the second race. In strength and stature they seem equal to the first. These present themselves, for the first time, as we proceed eastward, in the island of Ende; we have them again in Timor and the neighbouring islands, and they constitute the entire inhabitants of Tanna, New Caledonia, and the Feejee group.

The existence of these three distinct races of men, inhabiting one and the same country, is a strange and singular phenomenon. It is as if the European, the African, and the Hindoo races were huddled together, and inhabiting the same countries of Europe, the strongest driving the weakest into the mountains, or into remote and inaccessible quarters.

There is a wide difference in the degrees of civilization attained by the different tribes and nations of the vast region which we are describing. Some of them cannot count above four, and others have made a respectable progress in all the useful arts of life. Those who have attained the highest degree of civilization may, not unfavourably, be compared to the continental nations of Asia of the second rank, such as the Birmans and the people of Siam, Lao, and Camboja, whom indeed they greatly resemble in person, manners, and acquirements. They have made advances far beyond what had been attained by the most polished nations of America before the Spanish discovery. The nations which have acquired this extent of civilization are the Malays, Rejangs, Achinese, Lampongs, and (although occasionally acting the cannibal,) the Battas of Sumatra, the Javanese and Sundas of Java, the Bugis and Macassars of Celebes, and the four principal nations of the Philippine islands. Some minor tribes may indeed with safety be added, as the people of Bally, Lombock, Sulu, Ternate, and Mindanao. Among these nations there are four that stand pre-eminent, viz. the Malays, the Javanese, the Bugis, and the inhabitants of Luconia in the Philippines. The agriculture of these is equal to that of any people of continental Asia, the Chinese alone excepted; but for [illegible] share of this they are perhaps considerably indebted to a favourable soil and climate. From time immemorial they have tamed and used most of the animals which are used by the nations of Asia and Europe, and are fitted for the peculiarity of their climate, such as the horse, the ox, the buffalo, the dog, the hog, the cat, and the ordinary descriptions of domestic poultry. They have long cultivated the cotton plant, and weave and dye cotton fabrics with considerable skill. They have for ages been in possession of the useful and precious metals, and used money in their commerce. They have possessed the art of writing for a great many ages, and this art apparently sprung up among themselves, for there arose among them, as will afterwards be shown, no less than seven distinct alphabets, all of which, to appearance, are original and unborrowed. They possess a calendar, or divide time systematically, so as to regulate with considerable accuracy the common transactions of life. Their political institutions go a great way towards preserving order, and securing life and property, and their religion, for the most part, does not appear to have been accompanied by any bloody or cruel rites. Wherever the culture of grain is understood, and it is so among all the principal nations, civilization has most advanced. Where the people live on the produce of the sago-palm, and bread fruit, they have made less progress, and are found universally ignorant of the use of letters. Where fish is the chief subsistence, they are in a still lower state; and they are always savages when they live upon the casual produce of the forests, honey, wild-roots, and game.

The minor nations are in a very different state of society. A few of the yellow coloured race apply to some extent to agricultural pursuits; but the greater number lead a wandering life, living on the casual produce of the forests, rivers, or sea-coasts. Some are cannibals, and most of the tribes live in a state of perpetual warfare with each other, one of their strongest passions being that of hunting for the skulls of their enemies, which they pile up in their dwellings from generation to generation, as honourable trophies and heir-looms. With the exception of a few of the Negritos of New Guinea, who appear to have made some small progress in the arts, this race will be found more abject, miserable, and mischievous, than the lowest of the yellow race.

What is the origin of these different races? From whence did they migrate, if they migrated at all, or are they indigenous? Is the language spoken by these different races one and the same primitive tongue, originally spoken by one nation, and split into many dialects by the dispersion of its members? or, is each of the multitude of tongues now spoken, itself the distinct language of an original tribe? These are questions as curious as they are difficult of solution, and in the usual absence of historical records on such subjects, can only be answered, if, indeed, answered at all, by a critical examination of language. This has been attempted by the late Dr Leyden, by Mr Crawfurd in his History of the Indian Archipelago, and more fully and carefully by Mr Marsden, in his work on the Polynesian or East Insular languages.

There is not to be found throughout the whole of the Oceanic languages, one of complex structure, like the Sanscrit, the Greek, the Latin, and the German, in which the genders, numbers and relations of names, and the tenses and modes of verbs are formed by inflexions or varying the terminations of words; and, most probably, there never existed such a language. Still, preserving a close affinity, however, there are some of which the grammatical structure is a good deal more complex than that of others. In the language of the Philippine islands there is a dual number, and the verb is of considerable complexity in its form. The same observation applies in both respects to the languages of the rudest people of all, those of the continent of Australia. The construction and the rules of syntax of the languages of the South Sea Islands also differ very materially from those of the great tribes of the eastern islands.

In the languages of the Malayan or yellow complexioned race, there exist a great many words, which, in a greater or lesser degree, are common to almost all, and considering the state of society which belongs to even the most civilized of these nations, it is truly remarkable to what an extent this identity of particular words and terms pervades. It has been discovered to exist, in a manner which leaves it quite unequivocal, in the language of the people of Madagascar, not above two hundred and fifty miles from the coast of Africa, and in that of the people of Easter Island, not above fifteen hundred miles from the coast of South America. The distance of these two points cannot be less in any way than ten thousand miles. The degree in which identity of words can be traced is greatest among the more civilized nations, and, excluding Madagascar, which will be afterwards considered, decreases as we proceed eastward from Sumatra and Java. It wholly excludes many of the Negrito tribes, but not all, as will afterwards be shown. To account for this striking and interesting fact in the history of man and language, it has been argued that all the languages from Madagascar to Easter Island inclusive, the Negrito dialects excepted, were originally one language, and that the difference in them now discovered is simply the result of the dispersion of those who spoke it. But we are disposed to consider this theory as untenable. It appears to us to be contrary to all our knowledge and experience of the history of languages. Languages are many when people are savage and rude, or semibarbarous: in proportion as men become civilized, and communities become extensive, they become few in number, the smaller and ruder dialects being gradually absorbed or violently exterminated by the prevalence of the more polite, improved, and consequently more useful. We are unaware of the existence, in ancient or modern times, of any one language widely disseminated and extensively spoken by many rude tribes, disconnected by locality and without the knowledge of letters.[*] The whole world seems to us to abound with illustrations of the opposite truth. In China, as Du Halde observes, "every province, every great city, nay, every town, and for that matter, every large village, has its peculiar dialect, which is the reigning language, for every body speaks it, the learned as well as the common people and women. But then the women and the common people can talk no other." This arises from the obstacle already alluded to. Notwithstanding this, the Mandarin or common language is the general vernacular language of the inhabitants of the province of Kyang-nan, a population amounting to no less than 72,000,000 of people, a greater amount than that of the United Kingdom, France, Belgium, Holland, and the Peninsula put together.[*] In the Hindoo-Chinese countries, there exist at least twenty different languages, yet the great bulk of the people speak but six only. In Hindostan there are probably not less than forty distinct languages, yet the great mass of 120,000,000 of people use but eight, the remaining inhabitants, (a mere fraction, and consisting of the rudest of the whole,) having more than thirty languages amongst them. In Europe we see the most civilized and numerous communities speaking one language, as the German, the Italian, the French, the English, and the Spanish, while many tongues become numerous as we enter the barbarous parts of it, Russia and Turkey. In France, and in the British islands, the rude Celtic, to the great benefit of society, is in gradual progress of extinction, and even the Anglo-Saxon dialect of the Scotch is rapidly giving way to the English. In America, before the Spanish conquest, there existed but two or three tolerably polished languages, each of them spoken by a pretty numerous population. In that continent, although several have disappeared, it is known that there are still spoken upwards of 400 distinct languages, with not less than 2,000 dialects, by the indigenous population, who, at the utmost are not reckoned above 10,000,000 in number, whilst the Anglo-Americans, who speak but one language, are themselves alone more numerous.

On the principle that each Oceanic language is of separate and distinct origin, and that the people by whom they were spoken communicated words to each other exactly in proportion to the closeness of neighbourhood, or extent of intercourse between them, the ruder and weaker tribes commonly borrowing from the most improved and powerful, the different languages may be divided into several classes or groups, and named after the nation which seems to have exercised the greatest influence in its propagation. The first or Malayan group, includes Sumatra, the peninsula of Malacca, and the east and west coasts of Borneo, over which the Malayan language exercised such influence. The second or Javenese group, includes the island of Java and the neighbouring islands of Madura, Bali, and Lombox; in these the Javanese, a language bearing considerable resemblance to the Malayan, prevailed. The third or Bugis group, from the name of the principal nation and language of Celebes, extended itself over the islands of Bouton, Salayer, and Sumbawa, and part of the south coast of Borneo, where the Bugis settled and founded states. The Bugis language differs very materially from the two preceding. The fourth or Philippine group, in which the Tagala language has probably the greatest influence, takes in the great archipelago of the Philippines, including Mindanao, the cluster of the Sooloo islands, with Palawan, and a small portion of the southern promontory of Borneo. In the fifth or Molucca group, the leading influence was probably exercised by the language of the most civilized nation, the people of Ternate. A sixth group will embrace the South Sea Islands, inhabited by the yellow-complexioned race, whose languages, as we are informed by Mr Ellis in his Polynesian Researches, possess a great number of words that are common to all the dialects of the south sea, but which differ entirely from those of the northern or western Oceanic nations. A separate group, smaller than any of the preceding, might be formed of the languages spoken from Flores to Timor inclusive, by that race which is neither yellow-complexioned nor Negrito, but partakes of both, and which we have conjectured to be a third and distinct Oceanic race.

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[*] The Celtic language is said to have been universally spoken in Spain, Gaul, and the British islands, and the German language equally so from the Rhine to the Baltic; but of this there is no proof, and we are disposed to dispute a fact which is contrary to all authentic analogy in other parts of the world.

[*] Companion to the Chinese Kalendar. Canton. 1822.

To attempt any classification of the languages of the Negrito tribes would, from our ignorance, be a hopeless undertaking. From the little that we do know of them, they would seem, as we might very well expect, to differ even more from each other than they do from the languages of the yellow complexioned race, or as much as the most dissimilar of these differ from each other. In truth they will probably be found not to admit of any such classification. The language of each tribe among this race will in all likelihood be found distinct and original, and, wherever there are words in common, it will be only where an immediate neighbourhood has made the communication easy and readily available, to a people so exceedingly rude, weak, and ignorant. Specimens have been obtained of the dialects of the Negritos of the Andaman islands, of the Malayan peninsula, of New Guinea, and of those of several tribes of Australia; but, except in a few instances in the Australian languages, easily accounted for by the vicinity of the tribes, there is no semblance of affinity between any of them; an analogy which tends materially to discredit the hypothesis which would attribute a common origin to the languages of the yellow complexioned race.

It should be here observed, that what are called, in Europe, dialects, or the subdivisions of one language, under different names, much modified by time and circumstances, as in the case of the Spanish and Portuguese, of the Scotch and English, or the Erse and Irish, have no existence among the Oceanic nations. Languages here which have different names are never dialects of each other. A Malay is utterly unintelligible to a Lampong or a Batta, although his neighbours. A Sunda is unintelligible to a Javanese or to a native of Bali, although the three languages are written in the same character, and the nations speaking them contiguous to each other. In the same manner, a Bugis is unintelligible to a Macassar, although their languages are written in the same character, and although they have repeatedly conquered, and been conquered, by each other. If we are to credit some voyagers, this is not the case in many of the South Sea Islands. A native of the Society islands is, for example, described in Cooke's Voyages as being perfectly well understood by the natives of the Marquesas, distant at least 800 miles. We are inclined to question the accuracy of this statement, and rather to believe that Tupia, the friend of captain Cook, had imposed on the illustrious navigator and his companions, than to credit a story alike inconsistent with experience and analogy. The dialects of the same language which exist, however distinct the people speaking them, are but trifling modifications of what may be considered the parent language; and this is probably in a great measure owing to the very remarkable simplicity which is characteristic of the structure of all the languages of the Oceanic region. A Malay of Champa, Johore, and Borneo, have not the least difficulty in understanding each other, and the same is the case with the Bugis of Boni, Tuwaju, and of the Bornean colony of Coti. They, in fact, amount to little more than provincial variations.

The question still remains to be considered, how any portion of an Oceanic language, to whatever country that language belonged, should have reached points so exceedingly remote as Easter Island and the Sandwich group on one side, New Zealand on another, and Madagascar on a third. There can be no question, we think, but that the language must have been communicated from the populous and civilized quarter to the less populous and civilized, that is, except in the instance of Madagascar, from west to east. Any other theory would suppose a case which has never happened in any other part of the world, of weak and barbarous tribes imposing a portion of their language upon more powerful and civilized ones. It is perfectly easy to understand how such a language should have spread from one tribe to another within the tranquil and narrow seas, and with the assistance of the steady monsoons, between Sumatra and New Guinea. Considering the many islands, not very remote from each other, which run from New Guinea to the Friendly Islands, it is perhaps not very difficult to conceive how words of a western language should be communicated to the inhabitants even of these distant islands. Monsoons, or winds blowing one half of the year from east, and the other half from west, are now ascertained to prevail as far as the island of Rotuma, between the 170th and 180th degrees of east longitude, which in the course of ages would carry even frail native praos from one island to another, and thus propagate the common language. With respect to the more distant countries, considering the ignorance, unskilfulness, and want of enterprise, which characterise the state of society, even among the most improved of the insular races—races which have never gone, but by accident, beyond the precincts of their own peculiar region—the difficulty of rationally accounting for it is great. The matter must not, however, be left in the condition of a miracle or wonder: we must therefore make the attempt.

Beginning our examination to the north of what may be strictly called the Oceanic region, the first and nearest countries which occur, although not strictly within that region, are the Nicobar and Andaman islands in the gulph of Bengal—the first inhabited by the yellow complexioned race, with lank hair, and in a very tolerably civilized state; and the last by a Negrito race, in the very lowest scale of human existence. The nations inhabiting these two groups have every appearance of being, physically, the same, respectively, as the yellow and negro races of the Oceanic region, and yet their languages not only differ entirely from each other, but neither of them contains one word of he Oceanic languages. The languages of the licobar group, although agreeing in many words, ppear radically to differ among themselves. It certainly a most remarkable circumstance that hese islands, the largest of which is not above a undred miles distant from the north-west extrem- y of Sumatra, and between which the illustrious avigator Dampier sailed in an open boat, should ot contain a word of the Oceanic dialects, so idely spread in other quarters; neither do they eem to have adopted the language or religion of he Hindoos or Mohammedans. The natives of he Nicobars, however, have their own peculiar umerals, and in other respects exhibit considera- le evidence of an indigenous civilization; they did ot therefore stand in need of foreign aid, and the istance, although short, is in a stormy sea, with either monsoon favourable. It may be added at the languages of these islands are polysyllabic, d partake in no respect of the monosyllabic lan- ages of the adjacent continent. The existence a yellow complexioned race in this quarter, and near, yet with wholly distinct languages, ought, e might suppose, to be of itself quite sufficient destroy the theory of one great Oceanic lan- age.

The first point where we discover evidence of Oceanic language is among the people of ampa, both on the shores of the China sea, and the gulph of Siam. This is, however, an affair comparatively modern times, and the result of e settlement of a Malay colony about 400 years o. The people are of a different race from the abitants of the country, and, speaking a poly- llabic language among monosyllabic ones, are dis- ct to the present day; and their speech, of which possess a tolerably copious vocabulary, is no- ng more than a slightly modified dialect of the lay.[*] We find the next traces in the island of rmosa, not above fifty miles from the coast of ina. The west coast and plains of this island peopled by a comparatively recent Chinese ony, but the mountainous eastern side by an iginal race. It is, of course, in the dialect of se last only that traces of an Oceanic language to be discovered. From vicinity and similarity words, we judge that these people received the anic dialect through the medium of the Philip- es. The distance from the northern part of onia does not exceed 300 miles, and with the terly monsoon, which is the mild one in the na seas, there would be no difficulty, even in a rude state of navigation, in passing from the to the first. From the same Philippines, in robability, the Oceanic dialects were communi- d to the Marianne, the Pelew, and the Caro- islands, for here also the monsoons are propi- s.

urning now to the south-east, we are disposed onsider that the centre from which the Oce- language was communicated in this quarter, the language of the Bugis of Celebes. These, he present day, hold a commercial intercourse the Aru islands and the Negritos of New ea, and proceed yearly to the gulf of Carpen- , in Australia, to fish the Holothurion or Sea- , for the market of China. To the natives of Holland, who cannot count beyond four, and are too brutal to receive any useful information, have communicated nothing. If in the course of this voyage, their praos should be drifted by the prevailing easterly wind to the westward, they would naturally keep hold of the coast of Australia, and fortune and accident might conduct them to the latitude of westerly winds, which, in due course would bring them down upon the land of New Zealand, where they would first discover men of the same race with themselves, and, notwithstanding the barbarism of their manners, men bold, adventurous, and not inaccessible to a rude instruction. The praos of New Zealand might be drifted down by westerly winds even as far as Easter Island, and from Easter Island the trade winds would drift them, or the inhabitants of the island, upon the Marquesas and the Society Islands, from whence again a voyage seems practicable, even with praos, and within the trade winds, to the Sandwich Islands. The great similarity which exists between the numerals of all these islands, makes this hypothesis not improbable; at all events, it wears a greater air of probability than the supposed existence of one original general language, of which the experience of the rest of the world affords no example.

We have only now to consider how the Oceanic language reached Madagascar, distant from the nearest point of the Oceanic region, Sumatra, more than 3000 miles, in a strait direction. This, although at first sight the most difficult circumstance to be accounted for, turns out, in reality, to be one of the easiest, while, at the same time, it tends to illustrate the manner in which migration and dissemination of language may have taken place within the Oceanic region itself. Since our own possession of the Mauritius and its dependencies in Madagascar, during the last twenty-four years, several praos, drifted from Sumatra by the strength of the north-east monsoon, and carried into the trade winds, have reached Madagascar, as the first land, with several of their crews, whose lives were preserved by the accidental presence in their boats of a few cocoa nuts, which served them both as food and drink. These strangers, arriving among a very rude people, such as the inhabitants of Madagascar still are, (and which they would be in a still greater degree, were we to deprive them of the ideas and objects which are expressed in their language by Oceanic terms,) may be easily conceived in a condition to communicate useful instruction to them; more particularly when such instruction was of so humble a character as not to be above the capacity of the latter, as the numerals, and the name of rice, an article now extensively cultivated in Madagascar, and the introduction of which was probably owing to a few accidental handfuls found in the drifted praos of the Oceanic tribes. That this was the original channel of communication we think we are warranted in assuming, not only from these being the nearest countries, but from the striking similarity of the words in the respective languages. The languages of Acheen and the Nias islands are probably those which furnished words to the dialects of Madagascar. But it is by no means necessary to refer to one or two languages only. Words might be adopted from several of the Malayan dialects, according to the tribe of strangers that reached the coast of Madagascar. That such was the case, is rendered the more probable, when it is found that the several dialects of Madagascar do not always employ the same Oceanic term for the same thing. We may, however, observe, that the real number of Oceanic words that exist in these dialects, is, after all, but inconsiderable. We suspect that they will not exceed 100 or 150; a small addition indeed to a language which, in common with others of the same class, we have no doubt, will be found to contain not less than from 5000 to 6000 words. Neither do the borrowed words seem to be radical, but, on the contrary, such as men would naturally adopt in the progress of improvement, or such as all languages are liable to receive through caprice or accident, a process of which we have already given sufficient examples. The people of Madagascar are, in reality, a Negrito, or at least a Negro race, and if the Oceanic words found in their language were really radical, this ought to prove them to be of the yellow complexioned race, and disprove that part of Mr Marsden's theory, which proceeds on the belief that the languages of the Negritos and yellow complexioned race are radically and essentially distinct.

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[*] awford's Journal of a Mission to Siam and Cochin-China,

We have but very few words to say respecting the origin of the races that inhabit the Oceanic region. The yellow complexioned bears, as already noticed, the nearest resemblance, in form and complexion, to the Hindoo-Chinese race; but notwithstanding this, and their immediate neighbourhood, the evidence of language shows that there is not the slightest connection between them. The Malays and Siamese meet at the seventh degree of north latitude—their territories and their people are intermixed, and several of the Malay states have been for ages subject to the power of Siam; notwithstanding all this, their respective languages and manners are preserved perfectly distinct. Living among each other, they continue, to almost every intent and purpose, two distinct nations. The Oceanic tribes, therefore, did not emigrate from the Hindoo-Chinese countries; and the idea of a Chinese or Tartar origin is too ridiculous to deserve a moment's consideration. Neither did they emigrate from the continent of America. An examination of the nearest languages of that continent has detected no resemblance whatever in their genius, structure, or sound, to the Oceanic languages. It would be quite useless to attempt to trace their origin to the country of the Hindoos, of the Persians, or of the Arabs; for from all these people they are as distinct in physical form, and in all the essentials of language, as both are from the nations of Europe.

With respect to the Negrito races, the only people to whom they bear the least resemblance are the Negroes of the continent of Africa; but from them they are clearly a distinct race, being eminently wanting in the stature, figure, and general physical form of the Africans, while similarity of language has not been proved to exist in even a single instance. Besides this, there is the insuperable difficulty of reaching the Oceanic region from Africa, distant from 3000 to 4000 miles, in the very teeth of a vigorous trade wind. The fable of a Portuguese ship or ships being wrecked on the islands of the Oceanic region, with African slaves on board, is unworthy of all sober attention. With respect to the third race, if such it really be, intermediate between the yellow complexioned and the Negrito, nothing whatever exists to show its foreign origin. The three races then must be concluded to be aboriginal; and when we are reduced to adopt this position, we are certainly in no worse situation than when we attempt to trace the migrations of the old inhabitants of any other quarter of the globe. The races of the [illegible] islands are peculiar, like those inhabiting Europe or Africa, or America. An indigenous and independent civilization has sprung up among them, and in the course of many ages this civilization has been gradually, widely, and silently spread, in the manner in which we have endeavoured to explain. History, of course, makes no mention of the changes which this civilization has effected, because a people so rude have no history. The utmost length to which we can carry back the annals of the more civilized nations of the Oceanic region does not exceed six centuries, and even to this length we can only proceed with the aid of medals and monuments. It is but a poor antiquity that can hardly carry us back within two centuries of the Norman conquest of England! It by no means follows, however, that the Oceanic nations, and even their civilization, are not of very considerable antiquity, and we shall, probably, not mislead ourselves if we ascribe a period of several thousand years as having elapsed between their emerging from the savage state, and the time in which they are first mentioned in history. To the civilized nations of the ancient world they were nearly as unknown as the inhabitants of America; and the first acquaintance with them made by the nations of modern Europe goes little further back than three centuries, when they were found very nearly in the same state of civilization as that in which they exist at the present day.

O'KEEFE, John, a well-known dramatic writer, was born at Dublin; his father was a native of King's county, and his mother an O'Connor of the county of Wexford. He was educated by Father Austin, a learned Jesuit, and [illegible] tor; and was pursuing the study of drawing with the view of following the profession of an artist, when he imbibed a passion for the stage. Having been introduced to Mr Mossop, he obtained an engagement for three years at the Royal [illegible] Theatre; and he continued to perform in that city, and in the most respectable towns to which the company made summer excursions, for the space of twelve years. Though tragedy was his first choice, an accident soon discovered his forte to be comedy, to which he then turned his principal attention. His ambition to figure as an author was coeval with his theatrical taste; for, at the age of [illegible] he attempted a comedy of five acts, which, though wild and in parts puerile, he conducted [illegible] development with considerable ingenuity. When established as an actor, he every year produced some local trifle at his benefit. His first production, however, which attracted any important public attention, was his farce of "Tony Lumpkin," which, after it had been acted successfully in Dublin, he sent to Mr Colman, and it was played with great success at the Haymarket in 1778. This was succeeded in 1779 by "The Son-in-law," another farce, which was a great favourite at Dublin. Soon after this he left Ireland; and, on his arrival in London, applied for an engagement; but his services as an actor were declined. He then devoted himself entirely to dramatic composition, and produced in succession the following pieces:—The Dead Alive, a comic opera; the Agreeable Surprise, a farce; and the Banditti, a comic opera, in 1781. Lord Mayor's Day, a pantomime; the Maid the Mistress, a burletta; the Shamrock, a farce; the Young Quaker, a comedy; the [illegible] lay, a dramatic poem; and Friar Bacon, a panomime, all in 1783. Omai, a pantomime, 1785. Siege of Carzola, a comic opera, 1786. Prisoner it large, a comedy, 1788. The Toy, a comedy, 1789. The Fugitive, a musical entertainment, 1790. World in a Village, and London Hermit, comedies, 1793. Wild Oats, a comedy, 1794. Life's Vagaries, a comedy, and Irish Mimic, a musial entertainment, 1795. The Lie of the Day, a comedy, and The Lad of the Hills, a comic opera, 1796. Some of these were not printed; but in 1798 the following were collected and published in four volumes:—Alfred, a drama. The Basketnaker, a musical entertainment. The Beggar on Horseback. The Blacksmith of Antwerp. The Doldrum. The Eleventh of June. Little Hunchack. Modern Antiques. The Positive Man, and Tantararara Rogues All, farces. The Castle of Andalusia. The Czar Peter. The Farmer. Fontainbleau. The Highland Reel. Love in a Camp. The Man Milliner. The Poor Soldier, and Sprigs of Laurel, all denominated comic operas, r musical farces. Le Grenadier, a pantomime; nd The Wicklow Mountains, an opera. In the ame year he produced The Nosegay of Weeds, a arce, and She's Eloped, a comedy, which were not rinted. The dramatic works of O'Keefe exceed he number of fifty, if to the foregoing be added ome manuscript plays. In the year 1800, being educed by blindness and other misfortunes to a tate of great embarrassment, O'Keefe obtained a enefit at Covent Garden theatre, when the first iece performed was his "Lie of the Day." At he end of the second act Mr Lewis led the author pon the stage, and he there delivered a poetical ddress, in which humour and pathos were very appily blended. At a subsequent period, it is tated that his circumstances were so far improved, hat he was enabled to return a donation sent to im by the literary fund society,—an action which eflects the highest credit upon his honourable elings. In 1828, his health declining, and ever aving had a strong predilection for Devonshire, he moved westward, for the purpose of reaching, by ay stages, Sidmouth, or the neighbourhood of xeter; but, on arriving at Southampton, it beme apparent that a journey of eighty miles was sufficient trial of his strength. Here he took up s abode, and remained until the day of his death. is in-door amusements consisted of hearing the ewspapers, magazines, and other publications, parcularly Sir Walter Scott's novels, read to him by s daughter. On the mention of his own Cowip, a character in the "Agreeable Surprise," hich occurs twice in the "Tales of my Landlord," e smiled silently and was gratified; but when oken of by name in "St Ronan's Well," he oked evidently black and displeased. The words e "from Shakspeare to O'Keefe." "Ha!" he id, "the top and the bottom of the ladder; he ight have shoved me a few sticks higher." It ay be observed here, however, that Scott, in e expression, refers to the interval of *time* beeen the two dramatists, and not to their relative erits. O'Keefe died on the 4th Feb. 1833, aged ghty-six.

OLDHAM; a town in the hundred of Salford, d county of Lancaster, England, situated on the ver Medlock, six miles direct distance north-east om Manchester. About the middle of the last ntury, it consisted only of a few scattered uses, but with the progress of our manufactures, it has risen rapidly into importance, owing to its being in the vicinity of extensive coal-mines. Cotton, fustians, woollen and silk goods are manufactured to a large extent, and the making of hats is also carried on here on a great scale. An extensive inland navigation powerfully promotes the trade of the neighbourhood, both in coal and the multifarious branches of manufacture: commencing at Hollinwood, the Oldham canal communicates with the manufacturing metropolis, Manchester, and the towns of Ashton-under-Lyne and Stockport; and the Rochdale canal, proceeding through Chadderton, connects a number of important places with this part of the county. Another advantage, of high consideration to this town, is its vicinity to Manchester, the paramount mart for cotton goods, and where so vast a demand for the mineral product of this neighbourhood always exists. The town possesses a good parish church, and a number of dissenting places of worship. It was first constituted a borough by the reform bill, and now returns two members to parliament. Mr Cobbett was one of its first representatives. The limits of the borough, as defined by the boundary Act, comprise the townships of Oldham, Chadderton, Crompton and Royton, containing collectively a population of nearly 50,000 residents. Population of the township in 1831, 32,381.

OLD RED SANDSTONE. In the geological series of formations, the position of the old red sandstone is between the grey wacke series and the mountain limestone of the carboniferous series. It is a reddish or grayish sandstone, sometimes close grained and compact, sometimes friable and marly, and frequently of a coarse conglomerated structure. Beds of shale are found alternating with the sand stone, and sometimes grayish flagstones or slates. In general there are few indications of organic remains, but occasionally beds are found full of the remains of fishes interspersed with vegetable impressions of fuci and reeds. Of the fishes, the most common genera are dipterous, acanthodes, osteolepis, gyrolepis, cephalaspis, a species of ray, and a nondescript animal called coccosteus. The old red sandstone is found succeeding the Silurian, or transition rocks of England; it is abundant in Scotland, cropping out along the south and north ridges of the great Grampian range of primary mountains which intersect the northern division of the country. The quarries of Clashbinnie in Perthshire, several localities in Forfarshire, Garrie in Banffshire, Scaalcraig, Dipple, and the Findhorn in Morayshire, and the Sutors of Cromarty, all afford specimens of the organic remains of this particular formation.

OLEAGINOUS PLANTS. Among the articles of vegetable food, the oils which are extracted from plants afford one of the most valuable; nor are they of less importance in affording us light by their combustion. They are employed also in a number of manufactures, such as soap, woollens, varnishes, and perfumery. There are two kinds of vegetable oil, distinguished by the name of fixed and volatile. The latter may be extracted from almost every plant; but it is used only as a perfume or to flavour liqueurs, such as the oil called Attar of Roses. These sweet-scented oils constitute the luxury of the sense of smelling, but are frequently prejudicial, from their effect, on the nerves; and some few of them are employed medicinally. But the essential or volatile oils are not those most deserving our attention; the fixed oils are of much higher importance, and are extracted from a class of plants, hence called oleaginous. The oil is expressed from the seed of all these plants excepting the olive, in which it is obtained from the pericarp. The greater part of the seeds of oleaginous plants contain albumen, and it is from this that the oil is obtained; but when the seed has no albumen, as is the case with the poppy, it is the embryo which furnishes the oil. In the family of the *Euphorbaceæ*, all of which have oleaginous seeds, the embryo is of a venomous nature, and oil extracted from it would be poisonous; while that expressed from the albumen of the same plant, situated contiguous to the embryo, is perfectly innocent. Such is Bancul nut (*Aleurites Moluccanum*), which is remarkably mild, and is eaten by the inhabitants of the Molucca isles, as we eat hedge-nuts in Europe, while oil obtained from the embryo is an acrid poison. The fixed oils obtained by cultivation may be ranged under three heads: 1st, Olive-oil, the produce of warm climates; 2d, Nut-oil, that of temperate climates; and 3d, Oils obtained from the seeds of oleaginous herbs. The olive-tree originally came from Syria. That plant, as well as the vine, was brought to Marseilles by the Phocians; and, at the present day, it is cultivated on all the shores of the Mediterranean. It is a tree of very slow growth, but of long duration; it can support a temperature as low as eight or ten degrees of Fahrenheit, provided the air be dry; but, if accompanied with humidity, one or two degrees below the freezing point, proves fatal.

The cultivation of oleaginous herbs enters into the course of cropping; they exhaust the soil almost as much as grain, on account of the number of seeds to be ripened; they require, therefore, a considerable quantity of manure. These herbs are generally of the cruciform family, containing azote, an element of the animal kingdom which forms excellent manure; so that, after the soil is expressed, the cake which remains serves to restore the exhausted soil. Rape is a species of cabbage with thin roots, whose seeds yield excellent oil. The poppy is an oleaginous plant, with white, scarlet, and violet flowers, while the seeds are white or black. They yield oil, perfectly innoxious and wholesome, though drawn from the same plant which supplies us with opium. Flax also is an oleaginous herb. It is, however, chiefly cultivated for its stalks, from which linen thread is fabricated; but its seed also yields the oil we call linseed-oil. It is much used in the art of painting. Hemp is of the same description. There are some few oleaginous herbs of the leguminous family, such as the subterranean arachis (*Arachis hypogæa*), a plant we derive from America, which has the singular property of ripening its seeds under ground. This plant requires a loose sandy soil, in order that the lower branches may be enabled to bury themselves in the ground. In a state of cultivation, the earth should be heaped over them, as is done with potatoes. The upper branches, which blossom in the air, ripen no seed; while the lower lateral branches, which burrow in the earth, develope no regular blossom; that is to say, have no petals; but the stamens and pistils bring the seeds to perfection.

O'MEARA, Barry Edward, formerly surgeon to the ex-emperor Napoleon; was a native of Ireland, and the son of a military officer. He was educated at Trinity College and the royal college of surgeons, Dublin; and at an early age was appointed assistant surgeon in the sixty-second regiment, with which he served for some years in Sicily, Egypt, and Calabria, and was the senior medical officer to the troops which held the celebrated fortress of Scylla, the last stronghold of England on the continent of Europe during the resistless sway of Napoleon. Having sustained a siege for six weeks from a French corps of 6000 men, under gen. Lamarque, the garrison was at length compelled to abandon the fort, now reduced to a heap of ruins, and to retreat to Sicily. Mr O'Meara was recommended for promotion, but, some months after, had the misfortune to incur the displeasure of lieut.-gen. Sir John Stuart, by having acted as second to an old schoolfellow in an affair of honour; and, though the issue of it was bloodless, Sir John thought fit to compel both the challenger and his second to quit the service, judging it necessary to adopt the most rigorous measures in order to put a stop to a practice then too prevalent in the British army in Sicily. However, by the recommendation of Mr Grant, then the chief of the medical department in the Mediterranean, Mr O'Meara was immediately appointed assistant surgeon in the navy, and served as such on board the Victorious, commanded by admiral Sir John Talbot, and afterwards as surgeon of the Espiegle sloop and of the Goliath [illegible]. In the latter he served until the surrender of Bonaparte to the British government, when he was directed to accompany the emperor to St Helena in the capacity of medical attendant. In this difficult situation he acted to the entire satisfaction of Sir George Cockburn, who then had charge of Bonaparte, and of his successor Sir Pulteney Malcolm, and also received the thanks of lord Melville; but not harmonizing in opinion with the measures of Sir Hudson Lowe, which he deemed arbitrary and cruel, and "finding that more was required from him than he could reconcile with his feelings of honour," a rupture took place. Sir Hudson desired him to hold no further communication with the ex-emperor or any of his suite except on medical subjects; Mr O'Meara tendered his resignation, and after a long correspondence returned to England. On his return to London, he was well received by the lords of the admiralty, and it is said the valuable situation of surgeon to Greenwich hospital was offered to him; but, having preferred to the admiralty charges against Sir Hudson Lowe for tyrannical and oppressive conduct towards his prisoner, and other serious charges, his name was, by order of their lordships, erased from the list of naval surgeons. He afterwards produced various publications relative to his late employment; the titles of which are, "Manuscript de l'Ile d'Elbe. By Napoleon." "Letters from the Cape of Good Hope." "Letters from St Helena." "Letters from Count Las Casas, with a Preliminary Discourse." "Exposition of the treatment of Napoleon Bonaparte." "A Translation of the Memoirs of Napoleon, by himself." "A Voice from St Helena, or Napoleon in Exile," 2 vols. 8vo.

Mr O Meara's death took place at London on the 3d June, 1836. Some time before his death he had married a lady of considerable fortune, which made him very easy in his circumstances.

OOLITE; one of the series of geological formations, the *Lias*. (which see) forming the lower division. It is called oolite, or roestone, from ὠόν, an egg, and λίθος, stone, being composed of innumerable small globules, like the roe of a fish.

bedded in a calcareous cement. Sometimes these globules are the size of a pea; hence the term pisiform. The formation consists of a series of beds of impure yellowish limestone, alternating with beds of clay sandstone and marl, the average depth of which may be about 1200 feet. The colour is usually yellowish, brown, or ochray; the stone is of a dull earthy nature, rather friable, and unsusceptible as a polish. The Bath and Portland oolites are used as building stones, but they are not very durable. The nature of the globules which give the character to this stone, is not distinctly ascertained, it being doubtful whether they are crystalline minerals, or of animal origin. The organic remains found in the oolite are very numerous, and differ somewhat from the lias below. The different beds of the same series also vary, and have been divided into lower, middle, and upper. The lower beds contain numerous species of the ammonile, the namblus, belumnite, and other chambered univalve shells, while the unchambered univalves are rare. Numerous bivalve shells, whose inhabitants appear to have existed in shallow seas, are also found in he oolite. Madripores, multipores, sponges, and ther zoophytes, compose those beds denominated *oral rag*. The remains of fishes and reptiles, imilar to those of the lias, together with several species of the pterodactyle, or flying lizard, nd animals of the crocodile genus, all indicating be proximity of dry land, are abundantly common. he subordinate beds of this series are,

Bath oolite, containing minute globules, and roken shells cemented by calcareous matter, rming a compact building stone, for which purose it is extensively used.

Corpbrash, abounding in fossils, and overlying al beds in Yorkshire and Savoy.

Oxford clay. Between the lower and middle olites occurs a stratum of bituminous clay, 200 et thick, containing septariai, and skeletons of e icathyosaurus, specifically different from those the lias.

Middle oolite consists of beds of silicious and lcareous sandstone, with madripores.

Kimmeridge clay, lies between middle and upper lite; it is bituminous, of a grayish colour, and ntaining bones of saurian reptiles.

Upper oolite is composed of a calcareous silicious estone, with beds and nodules of flint. This is e Portland stone, of which Somerset House, and her public buildings in London, are constructed.

Stonesfield slate is found in the oolite of Oxdshire. Its organic remains consist of the rny covering of insects, bones of the opossum, the galosaurus, a gigantic lizard, forty feet in length.

OPIUM, (*a.* to article *China* in *Supplement.*) e chief places where the poppy is cultivated in ia for the manufacture of opium are at Malwa, ares, and Behar. One half of the Indian drug rown at Malwa, and there the cultivation of the t and the trade in opium are free, as the manment of the soil is beyond the authority of the pany, although the chiefs are under British proion. Nearly the whole of this portion goes to nbay, where it is shipped for China. At Be- and Benares, on the contrary, and indeed ughout the territories under the jurisdiction of East India Company, the cultivation of the py, the preparation of the drug, and the traffic until it is brought to Calcutta, are under a t monopoly.

In these districts the ryot or farmer is frequently compelled to cultivate the poppy at a fixed rate, and should it be discovered that he does this clandestinely, without having entered into such an engagement with the government, his property would be immediately attached, or he would be obliged to give securities for the faithful delivery of the product. A system of most oppressive espionage is at the same time established for the purpose of preventing the traffic in the slightest portion of this valuable drug. At certain seasons the Company's godowns are opened at Calcutta, and the sales of opium effected. Great numbers of the residents purchase for the sake of speculation, as the price continually varies in China. Such a wakeful eye is kept over the drug that it is scarcely possible to purchase a single pound at Calcutta from any other than the agents of the government.

From Mr Montgomery Martin's "Statistics of the Colonies of the British Empire," a notion can be obtained of the revenue derived by the Indian government from the monopoly in opium. From this it appears that in the season

	Chests.		Sicca Rupees.
ending 1800, they sold	4,054	for	3,142,591
1810 . .	4,561		8,070,955
1820 . .	4,006		8,255,603
1830 . .	8.778		11,255,767
1835 . .	12,977		13,215,464
1837 . .	16,916		25,396,300

Estimating the value of the sicca rupee at 2s. sterling, the opium sold in the season of 1837 would amount to £2,539,530.

Up to the late rupture with China, the trade in opium was conducted as follows. When the sales were effected at Bombay and Calcutta, the opium was shipped on board vessels expressly fitted for the trade, which proceeded immediately to China. They were called *clippers*, were remarkably handsome, well-built ships, and possessed superior sailing qualities. Arrived on the coast, they delivered their cargo into a class of vessels called *receiving ships*, anchored at the station of Lintin, or the adjacent anchorages of Capsingmoon or Cumsingmoon, situated without the Bocca Tigris, at the mouth of the Canton river.

As the importation was expressly forbidden by the Chinese government, it had now to be smuggled clandestinely into the country. For this purpose native smuggling boats were employed, which were well manned and armed. Orders from Canton were given to them, with which they proceeded to the receiving ships, and the opium was delivered to their charge. It was taken out of the chests, examined, and removed after being packed in convenient parcels, ready to be easily carried off in case of pursuit. Collision with the authorities rarely took place, as fees were regularly paid for connivance to the officers of the imperial preventive squadron. Indeed, it was not unfrequent for the custom house officers themselves to be engaged in the smuggling trade, and government boats have been observed taking in a cargo of opium in the open face of day. This was the usual way in which the importation was effected, but some portion was also taken up to Whanpan occasionally, and a certain number of chests was disposed of along the coast to the northward.

When arrived at the provincial city, the opium passed into the hands of native brokers or *melters*, who subjected it to a process by which the crude article was reduced to a watery extract. The Chinese designate the varieties of Indian opium by the names of *black earth*, *white skin*, and *red skin*, which severally fetch about 800, 600, and 400 dollars a chest. The quality which they prize in these samples may be gathered from a paper by Dr Butler, "On the Preparation of Opium for the Chinese Market," published in the Journal of the Asiatic Society of Bengal, in March, 1836. "The great object of the Bengal opium agencies is to furnish an article suitable to the peculiar tastes of the population of China, who value any sample of opium in direct proportion to the quantity of hot-drawn watery extract obtainable from it, and to the purity and strength of the flavour of that extract when dried and smoked through a pipe. The aim, therefore, of the agencies should be to prepare their opium so that it may retain as much as possible its native sensible qualities, and its solubility in hot water. Upon these points depends the virtually higher price that Benares opium brings in the China market, and the lower prices of Behar, Malwa, and Turkey opium. Of the last of these, equal (Chinese) values contain larger quantities of the narcotic principles of opium, but are from their greater spissitude, and the less careful preparation of the Behar and Malwa, incapable of yielding extracts in equal quantity and perfection of flavour with the Benares."

From calculations made by foreign residents in China, and published in the Chinese Repository in the year 1836, it appears that if 34,000 chests of opium are imported, they would yield 33,320,000 taëls, nearly equivalent to an ounce weight of smokeable extract. By allowing one taël to each person for daily consumption, the number of smokers supplied by this quantity of the drug would be 912,000. But it is evident from statements which subsequently appeared from other parties, that a mace, nearly equal to a drachm weight of the extract, would be an ample allowance for daily consumption. When we consider also that the same portion is two or three times ignited, that the extract which in its fresh state served the luxurious mandarin one day, supplies the pipe of an inferior the next, and that even the dregs and dirt of the pipe are greedily devoured by the menial, the number of consumers is greatly increased, and may be fairly estimated at more than two millions. But even this number, large in itself, looks small before the Chinese population of 300,000,000, or, as some will have it, 350,000,000; and if the above calculations be correct, we must believe, that the use of opium is not yet widely spread throughout the empire, but is confined to certain districts.

It is allowed that the effects of opium are the same whether swallowed in a solid or liquid state, or smoked through a pipe. The latter plan is usually practised by the Chinese, and no doubt would be pernicious even if used with moderation. But we will venture to say that this scarcely ever occurs. The pleasure is so great or the infatuation so strong that it cannot be resisted, and the drunkard is the victim of his folly. The words of a great poet, now no more, (Coleridge) on this subject will be recollected. They occur in a letter written to an intimate friend, while he was still a slave to the "accursed habit" into which "he was seduced ignorantly." "For ten years," he says, "the anguish of my spirit has been indescribable. Conceive a poor miserable wretch, who for many years has been attempting to beat off pain by a constant recurrence to the vice that reproduces it. Conceive a spirit in hell employed in tracing out for others the road to that heaven from which his crimes exclude him. In short, conceive whatever is most wretched, helpless, hopeless, and you will form as tolerable a notion of my state as it is possible for a good man to have. In the one crime of opium, what crime have I not made myself guilty of? After my death, I earnestly entreat that a full and unqualified narrative of my wretchedness and its guilty cause, may be made public, that at least some good may be effected by the dreadful example."

The following extract from a pamphlet published at Calcutta under the title of "Remarks on the Opium Trade with China," expresses the more injurious effects of opium over ardent spirits:—

"The intoxicating property, or rather properties of opium, differ in their nature from the intoxicating property of alcohol. In some respects the effects of the intoxication are also different. They both agree, however, in this, that they both stimulate the nervous system to an unnatural degree, and are only fit for use when such a state of bodily illness already exists as to make a stimulus of the nature subservient to the restoration of other functions disordered. They both agree in this, that the pleasurable sense of excitement attending their indulgence is followed by a relaxation of the system, and an undue depression of both the bodily and mental powers when the excitement is over. They both agree in this, as a consequence, that the oftener they are indulged in for the sake of the pleasurable sense of excitement, the greater must be the quantity used, in order to keep up the same degree of excitement; so that, if once the appetite is formed, constantly increasing indulgence is necessary and almost inevitable, and not only so, but is yielded to unconsciously of the increase. The craving of the appetite is invariably the man's standard for estimating what he can (as he supposes safely) indulge in. They both agree in this, that they disorder the digestive organs, predispose to most other diseases, and materially shorten the term of life. They both agree in this, that they stupify and derange the intellectual powers, and that habitually; for the seasons of depression are quite as far below healthy mental vigour, as those of alternate excitement are beyond. And over the final stages of mental suffering to which they both lead, one is fain to draw the veil: fiction can paint nothing of horror half so horrible. They both agree in this, that they utterly corrupt the moral sense: give to gross appetite the reins of [illegible]: deprave and brutalize the heart: shut up all the avenues to conscience: and make their victims the easy prey to every temptation that presents itself. There is but one point of difference between the intoxication of ardent spirits and that of opium deserving of particular attention here: and that is, the ten-fold force with which every [illegible] against the former applies to the latter. There is no slavery on earth to name with the bondage into which opium casts its victim. There is [illegible] one known instance of escape from its toils, when once they have fairly enveloped a man. We shall not appeal to the highly-wrought narratives of personal experience on this subject, which have of late years come before the public; they rather invite distrust than otherwise, by the exaggeration of their poetical style. But the fact is too notorious to be questioned for one moment, that there is in opium, when once indulged in, a [illegible] scination, which needs almost superhuman powers f self-denial and also capacity for the endurance f pain, to overcome. The operation of opium is, n this account, more deadly by many degrees than ts less tyrannous rival. In other respects above-nentioned there is generally a more rapid and more ermanent influence exerted by opium than by arlent spirits: an influence so directly inimical to all uman happiness whatever, that if the facts were ot before our eyes, we might well doubt the cuning of the arch fiend himself to recommend to one on of Adam the use of such an instrument of self-estruction."

In March, 1839, the Chinese government appear o have taken more decided steps than any which ad yet been adopted to prevent the introduction f opium, and under the direction of the imperial ommissioner from Pekin, the British residents vere shut up in their factory, and only obtained heir release on condition of giving up the stock f opium on board the ships, amounting to 20,283 hests, worth nearly £3,000,000 sterling, the suerintendent of British trade giving the owners ndemnity scrips. The contents of every chest vere subsequently emptied into sluices communiating with the river, in the presence of the Chinse authorities, and many of the residents of the ritish and other factories who were invited to ttend. Men were employed from day to day in astening the process of maceration until the pium had become muddy and fetid, when the hole of it was washed into the river. After his the merchants withdrew to Macao, whence hey were expelled by the Chinese on the 27th of ugust, in consequence of refusing to give up a eaman who had killed a Chinese in a brawl. 'hey then retired to their ships at Hong-Kong; ut the fleet being in want of provisions, the suerintendent of British trade, on the 4th of Sepember, endeavoured to obtain a supply from the atives, but was opposed by the Chinese warunks; and in the conflict which ensued, several hinese were killed, and some Europeans wounded. fresh attack upon the Chinese, which was to ave been made the following day, was counteranded. On the 11th of September the superinndent notified a blockade of Canton river and rt; but on the 16th the blockade was abandoned, consequence, it is said, of negociations having en commenced with the Chinese. Proceedings a still more serious nature have taken place bsequently; and these events have greatly comicated the state of our relations with China. In e speech from the throne, on the opening of rliament, on the 16th of January, 1840, the terruption of our commercial intercourse with at country was formally announced; and a naval rce has been despatched for the purpose of aidg, by a warlike demonstration, the negotiations ich may be required to settle these serious diffilties. In the meantime the sales of opium are vertised at Calcutta as usual; and the general inion is that it will be found impossible to prent the introduction of the article into China by y plan however rigorous; for the individuals, o should put the prohibitory law in executions nspire to evade it; and generally speaking, are low in moral character, as to prefer their inters to their duty.

The people of Java are addicted in a very rerkable degree to excess in the use of opium. ch of the natives or slaves as have been rendered desperate by the pressure of disappointment or misfortune, give themselves up entirely to the baneful indulgence, until their minds are raised to a state of frightful excitement, or rather frenzy. In this state they rush forth with dreadful purposes against all by whom they think they have been wronged or offended. They run along shouting "Amok! amok!" or "Kill! kill!" and in their blind fury stab at every person they meet, until self-preservation obliges the people to kill them as we kill a mad dog. This is what is termed "running amuck." This is most commonly the result of the strong propensity of the people to gambling, by which they are often deprived of all they possess in the world, and, "worst loss of all!" even lose their own self-respect. The immediate destruction of the muck-runners is authorised by the law in Java.

In some parts of India, opium is presented at visits and entertainments in the same familiar manner as the snuff-box in Europe. There is in that country a class of persons who carry letters and run with messages through the provinces. With no other provision than a piece of opium, a bag of rice, and a pot to draw water from the wells, these men perform journeys that would scarcely be credited in this country. In the same manner the trackless deserts of the different countries between the Indus and the Mediterranean are traversed by foot messengers by the aid of this drug, with a few dates perhaps, and a piece of coarse bread. The old traveller, Sir Thomas Herbert, very well describes this use of opium. "Opium (the juice of poppie) is of great use there also (in Persia:) good, if taken moderately; bad, nay mortal, if beyond measure: but by practice they make that familiar which would kill us; so that their medicine is our poison. They chaw it much,—for it helps catarrhs, cowardize, and the epilepsie; and, which is admirable, some extraordinary foot-posts they have who, by continual chawing this, with some other confection, are enabled to run day and night without intermission, seeming to be in a constant dream or giddiness, seeing but not knowing whom they meet, though well acquainted, and miss not their intended places, by a strange efficacy expulsing the tedious thoughts of travel, and rarely (wonderfully) for some days deceiving the body of its reasonable rest and lodging."

The very extensive use of this drug in Turkey and Persia is no doubt in a great degree owing to the prohibition of intoxicating liquors by the Mohammedan law. It was a substitute for them. Accordingly the use of the drug has much declined in Turkey of late years, since those who would otherwise have been opium-eaters have learned to indulge in wine and arrack. Nevertheless, the occasional use of opium is far from having ceased, nor has the race of *Theriakis*, or habitual opium-eaters, become extinct.

In England opium is almost entirely employed as a medicine. In Lincolnshire, it is said to be taken for its intoxicating properties, the practice having originated in its use as a remedy for the ague. The assertion that opium is taken with the same object in the manufacturing districts of Lancashire cannot be traced to any authentic source, and we do not believe that the abuse of the drug is prevalent in those parts. Neither opium nor any of the preparations in which it is a chief ingredient ought to be used except under the direction of medical men. It appears from a return made to the house of commons in 1839, that out of 543 persons in England and Wales who died from the effects of poison in 1837 and 1838, and on whom inquests were held, the fatality was occasioned in 186 cases by opium or its preparations; and nearly one-seventh of the whole number of cases (seventy-two) were young children, most of them under one year, to fifty-two of whom an overdose of opium, or laudanum, or some cordial in which opium is used, had been given; and in twenty other cases the children had been poisoned by taking such medicines in mistake.

ORMSKIRK; a town in the hundred of west Derby, county of Lancaster, situated on the road from Liverpool to Preston, 209 miles from London, and thirteen N. from Liverpool. The trade and manufactures of Ormskirk are on a limited scale, the principal establishments being hat manufactories and roperies. Ormskirk is a station for taking votes at the election of members for south Lancashire. The gingerbread made in this town is held in great estimation, and finds a ready sale in the surrounding towns. The church, dedicated to St Peter and St Paul, is very ancient. Population in 1831, 4251.

ORNITHYCHNOLOGY, (ὄρνις, ἴχνος, and λόγος.) signifying *stony bird-tracts*; a new and distinct branch of Oryctology, hitherto unnoticed and unexplored. In our article *Organic Remains*, we were very brief on Fossil Birds, owing to the paucity of materials. Indeed, the almost entire absence of birds from the organic remains found in rocks, has been a matter of considerable surprise to geologists. Up to the present time, there have only been nine or ten species mentioned by Cuvier, which he discovered in the tertiary gypsum beds near Paris. He regards all the cases reported by previous writers, as deserving little credit.

Geologists have assigned probable reasons, founded upon their structure, for these not being met with in a fossil condition. They are less liable than quadrupeds to be submerged beneath the waters, so as to be fossilized in aqueous deposits, and even when they happen to die in the water, they will float on the surface, and may therefore be discovered and devoured by rapacious animals.

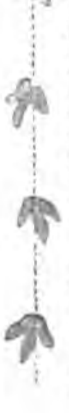
Some unexpected disclosures of the foot-prints of birds in fossiliferous rocks of the new red sandstone formation, on the banks of the river Connecticut, in Massachusetts, United States of America, have thrown some light upon this curious subject. These have been described by professor Hitchcock of Amherst college. His attention was first directed to this subject, by two slabs about forty inches square, which were originally united face to face; and on separation, presenting four most distinct depressions on one of them, with four correspondent projections on the other; precisely resembling the impressions of the feet of a large bird in mud. So perfect are these impressions, that among hundreds who have examined the specimens, none have the least doubt of their origin. These slabs were dug out of a quarry, in the south-west part of Montague, not half a mile from Connecticut river, and elevated about one hundred feet above that stream. The strata dip in an easterly direction, in an angle of only five degrees; and the layer containing the impressions was several feet below the surface. Only one kind of foot-print has been found there.

At Deerfield, Horse Race, Mount Tom, and many other places, these foot prints are found in the sandstone, some of them being small, and others incredibly large. At the last locality mentioned, there are three varieties of the rock in which these impressions occur. 1. A reddish [illegible] micaceous sandstone passing into shale; 2. A gray micaceous sandstone; 3. A very hard sandstone not being fissile and quite brittle, composed of clay and sand. This spot is more than [illegible] miles from Horse Race.

At the five quarries, these impressions are exhibited on the rock in its place, as depressions more or less perfect and deep, made by an animal with two feet, and usually three toes. In some few instances, a fourth hind toe, or heel, has made an impression, not directly in rear, but extending somewhat inward, and in one instance all the four toes point forward. Sometimes these ternary depressions run into one another, as the toes approach the point of convergence, but they also sometimes stop short at that point, as if the animal had not sunk deep enough to allow the heel to make an impression. At that point the stone is in some cases irregularly raised, as if the weight of the animal had caused the sand or mud to swell upwards in rear of the step, and in a few cases also, behind this slight elevation, there is a depression as if a knobbed heel had sunk slightly into the yielding mass.

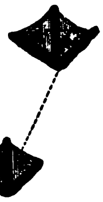
In many instances, also, there is a remarkable appendage to the hind part of the impression radiating from it in rear, in the larger tracts, to the distance of several inches, which has all the appearance of the impression of stiff hair or bristles.

In all cases where there are three toes pointed forward, the middle one is the longest; sometimes to a very considerable extent. In a majority of cases, the toes gradually taper more or less to a point; but in some most remarkable varieties, they are thick and somewhat knobbed, and terminate abruptly in most instances with claws. In the narrow bed impressions, distinct impressions of claws are not often seen, although they are sometimes discoverable. But this depends much upon the quality of the rock. If it be composed of fine clay, the claws are usually well marked. If the rock is cleaved a little above, or a little below the layer, on which the animal originally made the impression, the claws will, in all probability, not be visible. If a portion of the rock containing these impressions be carefully cloven, one face will present a ternary depression; and the other face will exhibit a corresponding figure projecting more or less, sometimes in high relief. The specimens in relief also often give a better idea of the structure of the foot that made the impressions than those that are depressed. These tracks are in regular succession in innumerable instances, and have doubtless been made by an animal in the act of walking, as exhibited in the annexed figure of the *O. Minimus.*



Many of the rocks exhibit the foot prints in an irregular mass, as if the bird had been walking to and fro. In the continuous tracts the impressions are not in a straight line, but the alternate impressions of the right and left foot pointing outwards, and deviating as much from the straight line as might be expected biped in progression forward. The interval, also, between the different steps varies; sometimes several inches in the smaller impressions, and even a foot or two in the larger; just as much, indeed, as we should expect in an animal moving at different paces: and where the impressions are distinct, it is easy to determine whether it were made by the right or left foot of the animal. This can be decided even in insulated foot-prints. Sometimes different species of animals, and different individuals, have crossed one another's tracks so often, that all is confusion; the whole surface being trodden over, as we often see to be the case where quadrupeds or ducks and geese resort, upon the muddy shores of a stream or pond. In short, there cannot remain a doubt but these impressions are the tracks of birds, made while the incipient sandstone and shale were in a plastic state. That they are the foot-prints of birds, the following arguments go to prove:

1. These impressions are evidently the tracks of a biped animal; for in no instance has there been discovered the existence of more than a single row of impressions. 2. They could not have been made by any other known biped, except birds. 3. They correspond well with the tracks of birds; having the same ternary division of their anterior part as the feet of birds. Frequently, and perhaps always, the toes, like those of birds, are terminated by claws. If the toes are sometimes slender, and sometimes thick and blunt, so are those of birds. If the hind toe or hollux is mostly wanting in these impressions, so are the feet of many genera of birds, especially the grallæ or waders.

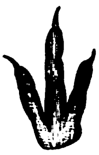


The accompanying figure represents recent impressions in mud, of the Canada goose (Anas Canadensis). The length of the foot is four inches, and of the step seven inches. The space beneath the web connecting the toes, is quite obvious on the mud; it being sunk below the general level, but not so deep s the toes. The entire absence of any such appearance in the fossil tracks, makes it almost certain, that none of them were produced by webooted birds.

All the varieties of tracts hitherto discovered, ay be included under two divisions: 1. The *Pachydactyle*, or thick toed; 2. The *Septodactyli*, r slender toed.

Division I.—Pachydactyle. Hitchcock.

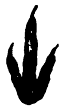
The toes of almost equal thickness through heir whole extent, except that they are tuberous, nd terminate rather abruptly; and usually with a ointed claw.



1. *Ornithicnites giganteus*. Toes, ree, directed forward; length of the ot, fifteen inches, exclusive of the aws; claw about two inches in ngth; total length of the foot from xteen to seventeen inches! Length the successive steps, from four to six et! Toes somewhat tuberculated; ner one, in some specimens, distinctly exhibiting ro protuberances, and the middle one three, less stinct; average thickness of the toes, one inch and fourth; breadth of ditto, two inches. Average ep supposed to be four feet.

From the length of step, the bird must have been twice the size of an ostrich, and its head elevated twelve to fifteen feet above the ground. The length of leg of the African ostrich is about four feet, and that of its foot ten inches.

Found only at Northampton, east side of Mount Tour, where it is abundant. In one place, there appeared the tracks of four individuals, pointing in one direction, from which it is inferred, that this species was gregareous.



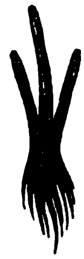
2. *O. Tuberosus*. Toes, three directed forward, each provided with a claw, from one inch to one and a half inches long; with tuberous swellings on the under side, quite distinct; heel very obvious, with three prominences in the middle toe, and two on the others; length of the foot, seven or eight inches. Length of step from twenty-four to thirty-three inches. Found at Northampton; and also at Horse Race, in Gill.

The most important difference between this and the *O. giganteus*, consists in its smaller size, It might be supposed the young of that species; but no intermediate sizes have been noticed; besides the middle toe of the former is larger in proportion to that of the others, than in the latter species, and the toes of the latter are considerably more divaricate than the former.

3. *O. Dubius*. Resembling in its general appearance the *O. tuberosus*, but much smaller, the foot being only four inches long, and the steps twelve inches; probably a distinct species, but uncertain.

Division II.—Septodactyle.

Toes much narrower, and less than in the first division. Some are very slender; they taper gradually to a point, and the claws not often distinctly perceptible.



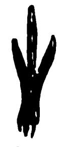
1. *O. Ingens*. Three toes, no visible claw on any specimen yet discovered, toes narrow, tapering gradually to a somewhat obtuse point; quite divaricate; at a few inches behind the heel there is a depression nearly an inch deep, and several inches across; the anterior slopes to which in the rear, appear as if large bristles had been impressed upon the mud. It would seem that the bird possessed a kind of knobbed heel, covered with hairy feathers, which sunk into the mud when the track was deep; impressions of the bristles extending backwards from the heel, from eight to nine inches, producing in all an impression not less than two feet! Length of the foot, exclusive of the hairy appendages, fifteen or sixteen inches. The ordinary step appears to have been about six feet! Found only at Horse Race.

The rock on which the foot prints of this species occur is composed of a fine blue mud, such as is now common in ponds and estuaries; and where the bird trod upon it, in some cases, it seems that the mud was pressed upwards, forming a ridge around the track in front; and so deep is the impression, that it would require nearly the weight of an elephant to produce one of equal depth.

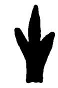
2. *O. Ingens*, variety *minor*. Length of the foot about twelve inches; step from forty to forty-five inches; agreeing in other respects with the *O. Ingens*.

3. *O. Diversus*. Three-toed, with a hairy appendage in the rear; length of foot, independent of the appendage, from two to six inches; length of step from eight to twenty-one inches.

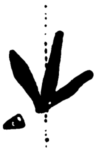
Under this are ranked several varieties from want of sufficient distinctive characters; but all differing widely in point of size, and in the length of step. The following two are considered as varieties only, but sufficiently distinct in form.



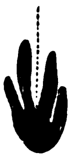
4. *O. Clarus.* Foot, exclusive of the hairy appendage, from four to six inches in length; toes approximate, and acuminate; inner toe shorter than the outer one; hairy appendage very distinct, from two to three inches long; probably with a knobbed heel; step from eighteen to twenty-five inches. Found on the south-west part of Montagu; also at Horse Race, and probably also at Northampton, and at South Hadley Canal. Impressed on a red micaceous sandstone.



5. *O. Platydactylus.* Middle toe from two to three inches long, very gibbous towards the extremity; hairy appendage very large and distinct; length of step from six to eight inches. It differs from *O. Clarus*, chiefly in the swelling of the middle toe, and in its diminutive size.



6. *O. Tetradactylus.* Length of the foot, exclusive of the hind toe, from two and a half, to three and a half inches; toes divaricate, more slender than in *O. diversus;* the hind one, or hallux turned inward, so as to be nearly in the line of the outer toe, prolonged backward; a space remains between the heel and the hind toe, indicating that its insertion is higher on the tarsus than the other toes, and its direction obliquely downwards. Length of step from ten to twelve inches. Destitute of a hairy appendage. Found at Horse Race.



7. *O. Palmatus.* With four toes, all directed forward; the fourth toe very short, proceeding from the inner part of the foot; heel broad; the toes proceeding from it somewhat in pairs; that is, the two inner ones and the two outer ones are closer together, and are less divergent than the two middle ones; toes very slender; foot from two and a half, to three inches long. Length of step eight inches. This remarkable specimen was discovered at Horse Race.

8. *O. Minimus.* Three toed; destitute of a hairy appendage at the heel; foot from half an inch, to an inch and a half in length; toes spreading widely; nearly of equal length; step three to five inches. Found very plentifully at Horse Race. Generally the foot is rather more than an inch long.

The discovery of the gigantic foot-prints of the *O. Giganteus*, is a further proof, that there were animals inhabiting the former world of much larger dimensions than any existing races: the Mammoth may be mentioned as the largest of quadrupeds, and this the largest of birds. In professor Hitchcock's "Report on the Geology of Massachusetts," he shows that the other organic beings, that must have been contemporaries with these immense birds, were their compeers in size; for we find that a Sea-Fan (Gorgonia Jacksoni,) found in the new red sandstone of West Springfield, that has been uncovered without reaching its limits, measures eighteen feet in length, and four feet in width! Indeed, the colossal bulk of these birds is in strict accordance with the early history of organic life in every part of our globe. The much higher temperature that then prevailed, seems to have been favourable to a gigantic development of every form of life. See *New Red Sandstone* in the present Supplement.

OTTLEY, William Young, an amateur artist and patron of the arts, was born August 6, 1771, and was the eldest son of Richard Ottley, Esq. of Dunston Park, near Thatcham, a man of considerable fortune. He was duly sent to school, first, at Richmond in Yorkshire and subsequently at Winchester; but he appears to have been emancipated altogether from school at a very early period; for by 1787, we find him to have avowedly adopted the arts as the subject of his studies and the business of his life.

In 1791, with the view of studying in the best field of the arts, he proceeded to Italy, where, practising his own pencil, and the pencil of others whom he employed in taking copies of all that struck his fancy, he became almost domesticated for about ten years. During this time, his propensities as a collector had every opportunity of developing themselves; and amongst a variety of other works of art, which he there became possessed of, is a very interesting series on wood, by the very earliest masters of Italy, of religious subjects, which were removed from the walls of churches at the time the French were in Italy, and thus timely rescued from destruction, by the hand of one who could appreciate their merit and their value to the brotherhood of art. Another extensive collection, which he formed at this period, was that of the original drawings of the best masters of Italy, from the earliest dawning of art down to the splendid days of Raffaele and Correggio, the Caraccis, and Salvator Rosa. Unwilling to retain to himself the sole enjoyment of surveying these valuable tracings of genius, he soon after his return to England, undertook the arduous task of putting forth a series of fac-similes of these drawings in large folio, under the title of the "Italian School of Design," upon which the first engravers and draughtsmen of the day were employed by him. Of this magnificent work, the first part appeared in 1808, and the second about four years afterwards; the third part, which concluded the work rather within the limits originally intended, did not appear till 1823. As it stands, the volume contains eighty-four plates, about one half of which are from the best drawings of Michael Angelo and Raffaelle. This collection of drawings Mr Ottley subsequently parted with to his friend Sir Thomas Lawrence for £8000. His collection of engravings, which he continued to enrich with frequent acquisitions up to within a very few years of his death, is supposed to have been one of the most complete and best selected in Europe. Mr Ottley's other principal works are, the companion-work of the "Florentine School" (1826); the "Origin and Early History of Engraving," (2 vols. 1816), a work well known to all contemporary bibliographers; "the Stafford Gallery;" "the Critical Catalogue of the National Gallery;" and the first part of an elaborate "Dictionary of Engravers," ([illegible] 1831), for which he had for thirty years been collecting materials, but from the labours [illegible] ing which he was obliged to desist when [illegible] at a later period of life; besides various contributions to Rees' Cyclopædia, the Archæologia, and other miscellaneous productions. The [illegible], in which he was engaged, and which, [illegible] the last few sheets, he lived to see through [illegible] was a controversial essay on the conflicting claims of Haarlem and Mentz to the honour of the first use of movable types. His death took place at his house in Devonshire Street, on Thursday the 26th of May, 1836. Three years before this he was elected curator of prints and drawings in the British Museum. His name is entitled to be held in recollection in a threefold character; namely, as an artist, a collector, and a writer on subjects connected with antiquities and the fine arts. As an artist, however, having wielded the pencil only as an amateur, he was comparatively but little known; and that chiefly amongst a select circle of friends, who always found difficulty in prevailing upon him to exhibit any of his performances. The only work of magnitude of his is the "Fall of Satan," eight feet by six, which was exhibited at Somerset house in 1823.

P

PARAGUAY, (*a.*) Paraguay occupies a central situation in the lower portion of the South American continent, the population of which is variously estimated at from 200,000 to 500,000. In 1811, it followed the example of the other Spanish provinces in South America, by declaring itself a free republic, when a new government was constituted under a junta, composed of a president, two assessors, and a secretary. It was soon found that the people—a race of mingled Spanish and Indian blood—were unfit for popular institutions, and for some time the greatest confusion prevailed. The first person who manifested any power of controlling the agitated elements of Paraguayse society, was the individual who officiated in the junta as secretary. This was Dr Francia, one of the most extraordinary despots of modern times, whose death took place in 1838. He was the son of a Frenchman who had settled in Paraguay, where he was born in the year 1757. Destined for the church, he had proceeded so far in the appropriate education, as to become a doctor of theology, but, in the course of his study of the canon law, a latent taste for jurisprudence was awakened in him, and he ultimately became a barrister before his native courts.

The junta, of which Don Fulgencio de Yegros was president, continued to form the government for two years. Francia, the only member of it who possessed abilities, information, or a love of business, was in fact the sole administrator of affairs; the others chiefly spending their time in country sports. Whenever it happened that they interfered to thwart his will, he had only to intimate his intention of retiring, in order to make them give way. It could not be expected that Francia should long submit to a subordinate situation under such circumstances. In 1813, a convention was called to take into consideration the state of affairs. Ignorant of history and of political science, they chanced to possess a copy of Rollin's well-known work, into which they looked for a constitution, as they would have looked into a dictionary for a word. Their fancy was caught by the consular government of Rome, and they resolved to appoint Yegros and Francia as the two consuls of Paraguay. Two curule chairs were provided for these officers, one inscribed *Pompey*, and the other *Cæsar;* and Francia, taking possession of the latter, indicated to all except the unlettered Paraguayse that he should not long be a half ruler. At the end of the first year of the consulate, when the convention again met, he found it no difficult task, by reference to their favourite author Rollin, to convince them that the country was now in one of those critical situations which induced the Romans to entrust the state to a dictator; and he was accordingly elected to that dignity for a term of three years; Yegros vainly attempting to resist the measure.

With the title of "Excellency," and a salary of 9000 dollars—of which, however, he gave back two-thirds, under the pretence that the state had more need of money than himself—he now took possession of the house which had formerly been occupied by the Spanish governor—a step analogous to that of his prototype Napoleon, in removing to the Luxembourg. He became still more austere in his habits—more studious—more thoroughly devoted to business. His attention was particularly directed to the improvement of his little army of about 5000 men; and so eager was he to obtain the reputation of an entire devotion to the good of his country, that, to improve the system of medicine, which had fallen into a low state in Paraguay, he submitted to have experiments tried on his own person. The government was conducted with remarkable energy, and before the expiration of the three years, he had so completely consolidated his power, as to obtain from the convention (1817) a decree constituting him dictator for life.

From this time Dr Francia reigned without control in Paraguay, having the legislative and executive combined in his single person, with the full right which the ancient Roman dictators possessed to dispose of the lives and fortunes of his people according to his pleasure. Soon after his last appointment, he ceased to show any anxiety to cultivate the good will of his subjects. He declared the race of Spaniards to be politically extinct, and interdicted them from marrying white women. Conspiracies were consequently formed against him: he was informed of them before they were matured, and he astounded the Spaniards by an order to appear within three hours before his palace. About three hundred came, and were led into a miserable prison, where several, including the deposed governor, died wretchedly, and from which the rest were not liberated till they had paid a collective fine of 150,000 dollars. He likewise suppressed the Catholic church, and all convents and dignitaries, appointing one vicar-general, a creature of his own, to administer the religious affairs of the people. But his most extraordinary measure was to close up the country against all foreign intercourse, forbidding any one either to enter or leave his territories; his object being, it is said, to prevent the people from being infected with any ideas from without, by which they might be tempted to rebel against his authority. Hence commerce was completely brought to a stand, and much distress unavoidably occasioned, but not without some counter-balancing advantage in the stimulus which was given to the production of all eatable and wearable articles within the province. When the order for non-intercourse was issued, there were about forty foreigners, chiefly merchants, at Assumcion: they were detained there for several years, and only liberated when Mr Canning acknowledged the independence of the South American states. Two Swiss naturalists, Regnger and Longchamps, and the eminent M. Bonpland, the companion of Humboldt, who had entered the country in pursuit of scientific objects, were likewise detained for some years.

The ancient municipalities, and all other vestiges of free institutions, were banished from Paraguay; and the law was administered by a few alcades, removable, of course, at the pleasure of the despot. Francia, indeed, managed every thing, with the assistance of only a few officers or creatures of his own. He planned roads and bridges, commanded and organised the army, conducted the revenues, and thought no details too mean for his attention. He did not encourage public instruction, but neither did he impede it. His authority was supported, during its earlier years, only by exercising great cruelty towards all who were not friendly to it; but when at length his arbitrary proceedings had demolished the strength of the middle and upper ranks, and fairly broke the spirit of the people, he began in some small degree to relent, and he was sometimes heard to say that possibly, in the course of time, a little liberty might be extended to the Paraguayse. Executions merely for the support of his power now ceased, and he began to receive with coldness the tales brought to him by spies and informers. Yet he ever found it necessary to act and move with the greatest caution for fear of assassination.

Francia was not perhaps quite a sane man. His father is known to have been a person of great eccentricity; he had a brother a lunatic, and a sister who was many years deranged; and he himself was subject to occasional fits of hypochondria, bordering on madness. During these times, he shut himself closely up in his palace, vented his ill humour on all around him, and only took pleasure in ordering executions. Of such scenes he was usually a witness from his palace windows.

He had no confidant, no favourite, no friend. The only person he is said to have ever shown any attachment to, was a sister who had charge of his countryhouse. One of his first acts after becoming dictator was to dismiss two nephews he had in the army, merely from a fear lest they should presume upon the relationship. One of them was afterwards confined in irons for four years, for having struck a man who had offended him at a ball, and the other passed a year in the public prison, for having employed one of the military band in a serenade which he gave his mistress. The dictator had for many years taken no part in public worship; he seized, on the contrary, every opportunity of showing his dislike and contempt for the religious observances of his subjects. On a commandant asking him for the image of a saint, that he might place a new constructed fortress under its protection, he exclaimed, "[illegible] Paraguayse, how long will you remain [illegible] When I was a Catholic, I believed as you do, but now I know that bullets are the best saints you can have on the frontiers." However [illegible] and austere, he had at least the merit of Robespierre, that of wishing to make no money by his power; he never accepted a present, and his salary was always in arrear. There was a mixture of [illegible] state with republican simplicity in his ordinary mode of life. He had at first a body guard of a hundred men, the tallest and handsomest that could be found; and a small escort of the [illegible] used to ride out with him when he took exercise, for the purpose of driving away all who might be upon or near the way. The body-guard was subsequently dissolved, and he was then content with the protection afforded by detachments of the army.

For several months in the year he resided at the cavalry barracks, which are outside the city, about a league from his usual residence. but then his manner of living was the same, except that he sometimes indulged in the pleasure of the chase. In the apartment that he occupied there were always arms within his reach, or placed upon the table near him; and sabres, the greater number unsheathed, were to be found in every corner. The fear of assassination was also shown in the etiquette prescribed at his audiences. The person admitted dared not approach nearer to the dictator than six paces, until he made him a sign to advance, and even then, he was obliged to stop at a distance of three steps. The officers, even, were not permitted to enter his presence with swords by their sides. He had a most penetrating look, blended with a strong expression of distrust. He wore the official costume, which consisted of a blue-laced coat (the uniform of a Spanish general), waistcoat, breeches, and stockings, of white silk, and shoes with gold buckles. The dictator was in his eighty-second year. Although his [illegible] was marked by great severities, it was not without its beneficial results. He promoted agriculture, originated many useful public works, rebuilt and embellished the capital, created an army, [illegible] the Indians, and procured respect and tranquillity for his people. It is also not impossible, that, under any other kind of rule, Paraguay might have undergone greater disasters, and witnessed much more bloodshed.

PARCHMENT, (a.) Parchment seems to have been rather a scarce commodity until modern times. It was no uncommon thing, in the middle ages, to erase a beautiful poem, or a valuable history, merely for the sake of the parchment or vellum on which it was written. Many of the valuable writings of the ancients have been recovered from beneath a monkish effusion, or a superstitious legend, by carefully following the traces of the pen, or style, which had impressed the former [illegible] upon the membrane; which traces had not been entirely obliterated by the second scribe. Persons who prepared parchment, by erasing a manuscript, were called "parchment restorers;" thus an old French writer says:—Our parchment makers are very skilful. Our parchment restorers are [illegible] so. Some parchment has been restored three or four times, and has successively received the [illegible] of Virgil, the controversies of the Arians, the decrees against the books of Aristotle, and, finally the books of Aristotle themselves. Parchment is like an easy man, who is always of the same opinion as the last speaker.

The preparation of parchment is by no means a pleasant or cleanly operation. Our readers may, probably, have seen carts loaded with sheep-skins proceeding from large markets, or in the vicinity of slaughter-houses. These skins are bought of the butcher by the parchment-maker, in order to prepare, from them, the material in which he deals. The skins are first stripped of their wool, which is sold to the wool merchant, who prepares it for the making of cloth, &c. They are then smeared over with quick-lime on the fleshy side, folded once in the direction of their length, laid in heaps, and so left to ferment for ten or fifteen days.

The skins are then washed, drained, and half-dried. A man, called the *skinner*, stretches the skin upon a wooden frame. This frame consists of four pieces of wood, mortised into each other at the four angles, and perforated lengthways from distance to distance, with holes furnished with wooden pins that may be turned like those of a violin. The skin is perforated with holes at the sides, and through every two holes a skewer is drawn; to this skewer a piece of string is tied, as also to the pins, which being turned equally, the skin is stretched tight over the frame. The flesh is now pared off with a sharp iron tool, which being done, the skin is moistened and powdered with fine chalk: then, with a piece of flat pumice-stone, the remainder of the flesh is scoured off. The iron tool is again passed over it, and it is again scoured with chalk and pumice-stone. The scraping with the iron tool is called *draining;* and the oftener this is done, the whiter becomes the skin. The wool or hair side of the skin is served in a similar manner; and the last operation of the skinner is to rub fine chalk over both sides of the skin with a piece of lambskin that has the wool on: this makes the skin smoother, and gives it a white down or knap. It is left to dry, and is removed from the frame by cutting it all round.

The *parchment-maker* now takes the skin thus prepared by the skinner. He employs two instruments; a sharp cutting tool, sharper and finer than the one employed by the skinner; and the *summer*, which is nothing more than a calf-skin well stretched upon a frame. The skin is fixed to the summer; and the parchment-maker then works with the sharp tool from the top to the bottom of the skin, and takes away about one half of its thickness. The skin being thus equally pared on both sides, it s well rubbed with pumice-stone. This operation s performed upon a kind of form, or bench, covered with a sack stuffed with flocks; and this process eaves the parchment fit for writing on.

The paring of the skin in its dry state upon the ummer, is the most difficult process in the whole rt of parchment-making; and is only entrusted to xperienced hands. The summer sometimes consists of two skins, and then the second is called *ountersummer*. The parings and clippings of the kin in the preparation of parchment are used in aking glue and size.

Parchment is sold in *rolls* of twenty skins each. The term roll is also employed in law. It is deved from the Latin *Rotulus*, a schedule of paper r parchment rolled up into a cylindrical form. The English probably derived their law term *roll* om the French *rolle;* because legal instruments ritten on parchment were sewed or glued together, and thus rolled up, whence comes the verb *to enrol.*

Vellum is a kind of parchment made from the skins of young calves: it is finer, whiter and smoother than common parchment, but prepared in the same manner, except that it is not passed through the lime pit.

Parchment is coloured for the purposes of binding, &c. The green dye is prepared from acetate of copper (verdigris), ground up with vinegar, with the addition of a little sap green. Yellow dye is prepared from saffron; a transparent red from brazil wood; blue from indigo, ground up with vinegar; black from the sulphate of iron and solution of galls. *Virgin parchment*, which is thinner, finer, and whiter than any other kind, and used for fancy work, such as ladies' fans, &c., is made of the skin of a very young lamb or kid.

Parchment forms a considerable article of French commerce. It is made in most of the cities of France, and vast quantities of it are imported into England, Flanders, Holland, Spain, and Portugal.

PARIS BASIN. This was the first tertiary formation minutely examined, and the researches of Cuvier and Brongniart in this locality gave a new impulse to, and introduced a new era in geological science. The area called the Paris Basin, extends in length to 180 miles from north-east to south-west, and about 90 miles from east to west. This space is a great depression in the chalk, which has been filled up by alternating groups of marine and fresh water strata. Cuvier enumerates the following groups:

1. Fresh water formation,	Plastic clay. Signite. First sandstone.
2. First marine formation,	Calcaire grossier.
3. Second fresh water formation,	Silicious limestone. Gypsum, with bones of animals. Fresh water marls.
4. Second marine formation,	Gypseous marine marls. Upper marine sands and sandstones. Upper marine marls and limestones.
5. Third fresh water formation,	Silicious millstone without shells. Silicious millstone, with shells. Upper fresh water marls.

Cuvier supposed that these formations had been at successive periods deposited over the chalk, and that, consequently, the land had been alternately submerged and elevated above the waters of the ocean. Subsequent investigations of Prevost and others have demonstrated, however, that in all probability the strata were deposited in a gulf, at one extremity of which the sea entered; and at the other a large river, while other streams may have flowed in at different points, and thus gave rise to the alternating mixture of marine and fluviatile remains, which are ever found associated together.

The *Plastic Clay*, No. 1, and marls, are found both in the upper and lower beds, and contain fresh water shells, lignite, and drift wood, evidently the deposit of a large river entering the basin. This deposit, as might be expected, is of partial extent throughout the area of the basin.

The *Calcaire Grossier*, No. 2, is a coarse limestone, often passing into sand, such as may partly have been derived from the debris of the subjacent chalk. It contains 400 distinct species of shells, both marine and fluviabile; many of these are greatly comminuted, but others are entire and perfect. Of these, 137 species are of the genus

Cerithium, animals that are known to inhabit the mouths of rivers running into the sea, where the water is of a brakish quality.

The Calcaire silicieux, No. 3, is a compact siliceous limestone, resembling a precipitate from the waters of mineral springs. It is often traversed by small empty sinuous cavities; is for the most part devoid of organic remains, but in some places contains fresh water and land species, and never any marine fossils. This limestone occupies a distinct part of the basin, from the calcaire grossier, although at their thinner edges they alternate with each other. The gypsum and marls, supposed by Cuvier to be of subsequent origin to the beds already enumerated, are found by Prevost to alternate repeatedly with them. The gypsum and marl beds are in greatest abundance towards the centre of the basin. In these beds, the skeletons of sixty-three mammalia have been found together, with seventeen species of reptiles and birds. Of the mammalian quadrupeds, thirty-two are hoofed animals, non-ruminating; twelve are ruminating animals; seventeen are of the rodentia or gnawers; eight are carnivorous; two are edentata or toothless, of the sloth genus; and two amphibious.

The Second or Upper marine formations, No. 4, consists of marls and micaceous and quartzon sand, upwards of eighty feet thick.

The Third fresh water formation, No. 5, consists of marls interspersed with beds of flint and flinty nodules, one set of flinty layers containing a number of fossils, the other none.

PATRONAGE. In the ecclesiastical law of Scotland, a patron is one who enjoys, along with other rights of less importance, the right of presenting a parochial minister to a vacant charge. It would appear, that patrons were originally merely the guardians of the temporal property of particular churches; and that the rights afterwards attached to patronage were at first conceded by the church, only to those who endowed particular churches, with a view to encourage the practice. Afterwards, however, similar rights in reference to other churches, were assumed by persons of influence in the neighbourhood; and while the Roman Catholic religion prevailed, the pope, and since the Reformation, the Crown, has claimed to be considered patrons of all churches in regard to which no right of patronage could be shown by individuals. In addition to the right of presentation, the patron in former times had a pre-eminent seat, and a burial-place in the church, and a right of precedency in processions; his name and arms were engraved on the church, bells, &c. He had also the disposal of the fruits of the benefice during a vacancy, and his consent was necessary to the validity of leases or feus by the incumbent. The vacant stipends now go the ministers' widows' fund. The statute 1567, c. 7, which abolished Popery, and recognised the Reformed religion, reserved "the representation of laick patronages," by "the just and auncient patrones." And, in still broader terms, the act 1592, c. 116, provided that the presbyteries to whom all presentations were thereby appointed to be directed, "be bound and astricted to receive and admit quhatsumever qualified minister presented be his majesty or laick patronis." The act immediately succeeding, (c. 117,) declared, in reference to benefices rendered vacant by the deposition of the incumbent, that, if the presbytery refused a minister presented by the patron, the latter should be entitled to retain the fruits of the benefice. On the establishment of Episcopacy, the principle of these acts was adopted in the act 1612, c. 1, by which presentations were appointed to be directed to the bishop of the diocese, and it was provided that, if the bishop should refuse to admit a qualified minister, still undeposed, it should be lawful for the patron to retain the fruits of the benefice; and that, if no sufficient cause should be given for refusal, letters of horning should be issued, charging the ordinary, (i. e. the bishop) to do his duty in receiving and admitting the presentee. Some time after the re-establishment of Presbytery, patronage was abolished by 1649, c. 23, which empowered presbyteries to settle ministers "on the sute and calling, or with the consent of the congregation, on whom none is to be obtruded against their will." At the Restoration, the act 1649 fell under the rescissory act. But patronage was again abolished by 1690, c. 23, and the right of election for the approval of the congregation given to the elders, with the heritors, or the magistrates in burghs. As compensation, patrons were to receive 600 merks (£33 6s. sterling;) on receiving which, they were bound to execute a deed of renunciation of the patronage. Only three parishes (Cadder, Old and New Monkland) had obtained effectual renunciations, when the right of patrons to present was again restored by 10 Anne, c. 12, which declared that it should be lawful to all patrons, who had not executed renunciations in terms of the former statute, to present as formerly, and that presbyteries should be bound to admit the qualified presentees, as presentees ought to have been admitted before the passing of the act. This act is still in force, and at present, accordingly, the first step in the settlement of a parochial minister, is the presentation by the patron. But the presentee must, before he acquires a right to the stipend and other emoluments of his office, be admitted to it according to the rules of the church. By the act of the General Assembly 1835, it is provided, that no one shall be admitted a minister, if a major part of the male heads of families, communicants, dissent from his call. This act has, in a recent decision of the Court of Session, been considered *ultra vires* of the General Assembly; a majority of the whole Court of Session holding that the presbytery were acting illegally in refusing admission to a presentee, in conformity with the terms of it. Earl of Kinnoul *v.* presbytery of Auchterarder, 8th March, 1838. The decision was confirmed by the House of Lords.

Patronage is an heritable right. But it is essentially a *jus incorporale*, transferable by disposition without infeftment. It is, however, capable of being feudalised, after which it can be competently conveyed only by infeftment. The usual symbols are a psalm-book, and the keys of the church. It was held that patronages were not included in the act of annexation, 1587. Lords of Erection were held entitled to exercise a right of patronage, by presenting ministers to the several churches attached to the erected benefices. The crown, as already said, has right to all patronages to which no title can be proved; and hence, in a question with the crown, the failure of a subject to prove his title, establishes the crown's right. A right of patronage cannot be lost by mere neglect to exercise it. There must be contrary positive prescription. A right of patronage may be made the subject of a liferent provision, by way of [illegible] to a widow, and she will have right to present during her life. The magistrates of a royal burgh cannot alienate the patronage of a church within burgh. Where a patronage is given to one in liferent, and another in fee, the liferenter is entitled to present. Where, however, (as may be validly done,) the patronage is conveyed to the heritors of a parish, fiars only are understood to be meant. A presentation by a married woman must have the concurrence of her husband. A tutor may present to the churches of which his pupil is patron; and minors may present, their curators, if they have any, giving their consent. A patron cannot present himself to the benefice. The exercise of the right of patronage may sometimes give rise to questions of right; and it may be difficult to determine whether the civil or ecclesiastical courts have jurisdiction in these questions. The judgment of the church courts is absolute in determining the fitness of the presentee for the pastoral office; but the Court of Session has the primary and exclusive jurisdiction in questions relative to the validity of the presentation. Although, however, a presbytery should erroneously reject a valid presentation, or refuse to settle a presentee on grounds not cognisable by them, they cannot be compelled to settle him by civil diligence, which the act 1612, c. 1, empowered a patron to employ against a bishop who refused to collate a qualified presentee. A person may be admitted by the presbytery to the pastoral office; but without a valid title to the benefice, he is not entitled to the fruits. Accordingly, when a presbytery reject a presentation, and, pending proceedings in the civil courts for determining its validity, settle another minister, that minister is not entitled to draw the fruits of the benefice. It would appear that in such a case the Ministers' Widows' Fund would be entitled to the stipend, as vacant stipend. The law of patronage, including Calls, *Jus devolutum*, the Settlement of ministers, &c., has been ably digested by Mr Dunlop in his separate treatise on patronage, (1833.) For further information on subjects connected with the constitution of the church of Scotland, see the article *Assembly, General*, in the body of the Encyclopedia; also the article *Scotland*, subdivision *Church*.

PEARSON, Richard, M. D., an eminent physician, was a native of Birmingham, where he was born in 1765. Agreeably to his own wishes, he was designed for the medical profession, for which he had cherished an early attachment, manifested even in his boyhood by a taste for botany and an insatiable curiosity to understand and examine the structure of animals. Accordingly, at the usual period, he entered upon the study of medicine, under the tuition of Mr Tomlinson, an enlightened practitioner in Birmingham; nor was he long in justifying his choice of a profession, and affording an earnest of his future excellence therein; for, in the first year of his noviciate, a gold medal, being the first proposed by the Royal Humane Society, for the best dissertation on the signs of death with reference to its distinction from the state of suspended animation, was unanimously adjudged to him. He afterwards studied at Edinburgh, at that time in the zenith of its fame as a medical university, and he obtained in 1786, his degree with honour. Here he numbered among his college friends, Sir James Mackintosh, Dr Beddoes, Dr Duncan, and other equally eminent men; and, besides the usual course of medical study, he acquired great proficiency in natural history and botany, two sciences which powerfully influenced the bent of his subsequent professional studies, and were ever after among his favourite and unwearied pursuits. After two more years, which were spent on the continent, in Germany, France, and Italy, he settled as a physician in his native town, Birmingham. Here, by the influence and recommendation of his attached friend, Dr Withering, he soon succeeded that eminent practitioner and botanist as one of the physicians to the General Hospital, and began to devote his active and well-stored mind to the zealous exercise of his profession, in which he very early acquired a high reputation, and was enjoying an extensive and rapidly increasing practice, when he was induced, in the year 1800, to take up his residence in London. His published works, during his continuance in Birmingham, a period of about twelve years, consisted of three dissertations, one on phthisis pulmonalis, another on hydrophobia, and the third on the epidemic bilious fever in 1798. In London he published his "Observations on the Epidemic Catarrhal Fever, or Influenza, of 1803," which rapidly passed through many editions; and, in the following year his outlines of a plan for arresting the progress of a malignant contagion which was raging on the shores of the Mediterranean, and hourly expected in England, increased his reputation, and gained him the notice of the highest individuals both in and out of his profession. But the work which above all established his fame in the medical world, and for which few were so well qualified, by an extensive acquaintance with natural science as himself, was his "Practical Synopsis of the Materia Alimentaria and Materia Medica," the first part of which had appeared anonymously so early as 1797.

From this time Dr Pearson took his place among the most distinguished members of the medical profession in London. His co-operation was solicited in the principal literary and scientific productions of the time, and he was enrolled a fellow of most of the learned societies in London,—the Medical and Medico-Chirurgical, the Linnæan, the Antiquarian, and others. By the earnest desire of the editor, the late arch-deacon Nares, he contributed the medical reviews for the British Critic; for a certain period he furnished the articles on Medicine in Dr Rees's Cyclopedia, and was associated with the celebrated Dr Hutton and Dr Shaw in the abridgment of the Philosophical Transactions from their commencement. While still in the enjoyment of a metropolitan reputation, he left London, and after a short residence at Reading, and afterwards at Sutton among his relations and friends, he again returned to Birmingham, where he passed the remainder of his life. His object in thus repairing to his native place being not so much the desire of practice, as of a retirement where he could enjoy the pleasures of medical society, little remains to be said of his professional career, except that several of those families who had formerly confided in him, both in the town and in the country, were happy in the opportunity of consulting him, and not a few medical men gladly availed themselves of his acknowledged experience. On the opening of the medical school in Birmingham, he delivered the first introductory lecture; and to the success of it his subsequent courses of lectures, were highly instrumental. The last professional acts of his life were, a paper communicated to the Edinburgh Medical Journal, on the preference to be given in medicine to the seeds over the other parts of plants, where the former were found to possess equal medicinal properties; and a tract in illustration of the principle, published in his last illness, on the medical properties of the seeds of the Spanish broom. Dr Pearson's death took place at Warwick, on the 11th of January, 1836. In private life, he was an affectionate father, and a warm and steady friend. With great independence of thought he united perfect charity. His unusual conversational powers were marked by a cheerful readiness to impart to all ages his varied information. His benevolence was unbounded, and displayed itself daily and hourly,—to the poor by open-handed generosity, to his friends by unceasing acts of kindness, and to all mankind by his constant endeavours to promote every thing which could benefit the human race.

PEEBLES-SHIRE, OR TWEEDDALE, a county of Scotland, bounded on the north by the county of Mid-Lothian, on the south by Selkirkshire and Dumfries-shire, on the east by Selkirkshire and Mid-Lothian, and on the west by Lanarkshire. Its extreme length, from north to south is about thirty miles; its greatest breadth from east to west is about twenty-two. It is a hilly pastoral county, the general elevation of the pasture-lands being about 1200 feet, yet these are mostly covered with green herbage, and on the banks of the streams are many fertile spots. The river Tweed rises in the south-western extremity of the county, and flowing first north-east and then east, divides it into two nearly equal parts. The other streams of the county are, the Biggar, the Lyne, the Eddlestone, the Leithan, the Mannor and the Quair, which all fall into the Tweed; and the North and South Esk, which fall into the sea at Musselburgh. Peebles-shire is deficient in minerals, particularly coal, which circumstance accounts in some measure for the absence of any considerable manufacture in the county. The population is thinly scattered, and mostly engaged in agricultural and pastoral pursuits. The number of sheep which pasture in the county is estimated at above 120,000. The majority of these are of the Cheviot breed, which has of late years supplanted the old Tweeddale variety, being found more valuable for its fleece. The county has only one town, Peebles, and a few villages, namely, Linton, Eddlestone, Skirling, Broughton, and Innerleithen, the latter place celebrated for its mineral waters, which are said to be good for the cure of old wounds, diseases of the eyes, and for relieving stomach and bilious complaints. The *town of Peebles* is situated twenty-one miles south from Edinburgh, and is of great antiquity as a seat of population. It seems to have been occasionally visited by the Scottish sovereigns in their hunting excursions, and one of our finest old Scottish descriptive poems, "Peebles to the Play," attributed to the first James, celebrates a festival which annually took place at Peebles on Beltane day or the first of May. Peebles is divided into an Old and New Town, and is bounded on the south by the Tweed, on the north by the Eddlestone water. The inhabitants are chiefly employed in hand-loom weaving, fishing, country labour, &c. The town, from its interesting and healthy situation in a pastoral district, its excellent seminaries, and other advantages, is often selected as a place of residence by families in easy circumstances. Population of the burgh and parish in 1831, 2750; of the county, 10,578.

PEMBROKESHIRE; a maritime county in South Wales, surrounded by the sea every where except on the eastern side, which is bounded by Carmarthenshire and Cardiganshire. Its extreme length is thirty miles, and its greatest breadth twenty-seven. It forms the most level portion of Wales, the hills being all of moderate elevation. The principal rivers of the county are the [illegible] and the Eastern Cleddaus and Western Cleddau. These two latter unite, and form the confluent estuary of Milford Haven. The agriculture of the county is in general in a backward state, but great numbers of black cattle and sheep are reared and sent to the south of England, where they are much prized for their flesh. The manufactures of the county are trifling, but coal is largely exported, and there are a number of fishing-towns along the coast. The inhabitants of Pembrokeshire are divided into English and Welsh. Between the two classes, in former times, great animosity and a complete separation existed, but intermarriages are now frequent. Between Milford Haven and St George's channel, where the English live, a colony of Flemings was permitted to settle in the reign of Henry I. and the district is commonly called Little England beyond Wales. The English language is admitted to be here spoken with great purity. The towns of Pembrokeshire, with a population above 2000, are, Pembroke, 6511; Haverford West, 3915; Narberth, 2589; St David's (city) [illegible]; Tenby, 2128; and Dogmels, [illegible]. Pembroke, the county town, stands on a singular neck of land dividing the small estuary of Down Pul, which flows from Milford Haven. It is [illegible] miles from London, and 10 from Haverford West. It was once defended by strong walls and a powerful castle, the ruins of which still remain. The town consists chiefly of one long street, which is neat and well-built, extending from east to west on the ridge of a hill, and terminating at the west end on a steep precipice, on which the castle is situated. The county assizes and elections are held here, and there is a considerable market on the Saturdays. Population of the county in 1831, [illegible].

PENANG, OR PRINCE OF WALES'S ISLAND,* an island of the Indian ocean, situated on the west coast of the Malayan peninsula, in latitude from 5° 15′ to 5° 29′ north, and longitude 100° east; its greatest length is sixteen miles from north to south, and its greatest breadth twelve miles at the north, and decreasing to eight miles at the south, thus forming an irregular four-sided shape, with a range of lofty hills in the centre, the whole computed to contain [illegible] square miles. The valley of Penang, about three miles in breadth, is the level part of the island on its eastern side, extending from the hills to the sea, of a triangular shape, the ranges of mountains forming the base and the apex, called Tanjong, jutting into the harbour, and having George Town (the capital) and the Fort of Penang built on it, on which, for three miles in every direction from the point, private houses extend. Almost the whole of the northern shore is mountainous, and through the centre of the island runs a range of hills, decreasing in height and magnitude as they extend towards the south. On the west and south of the mountains there is a considerable quantity of level ground of good quality for every species of cultivation, as is now demonstrated by the general culture thereof. Indeed two-thirds of Penang is of level or gentle inclination. The east, owing to its moistness, is covered with rice fields; the south and west valleys, though partly cultivated for the same purpose, are chiefly laid out in pepper gardens and spice plantations. Every where close to the coast, as in Ceylon, runs an extensive belt of cocoa-nut trees, and scattered over the island in various groups appear groves of the graceful areca palm (or Penang) from which the isle takes its Malay name. The hills and low grounds, where not cultivated, are thickly covered with wood. Vegetation is splendidly luxuriant, and for miles the eye rests on one dense mass of mountain forest. Besides George Town (the capital) above alluded to, there is only one large collection of houses entitled James Town, situated on the sea shore, four miles to the south of the capital, amidst a grove of the lovely palm tribe. Numerous small villages and Malay topes are scattered over the island, especially on the south side, often beautifully and romantically situated on the coast or amidst spice groves in the vales.

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* Abridged from "The British Colonial Library," by R. Montgomery Martin, Esq.

The harbour of George Town, the capital, is capacious, with good anchorage, and well defended; it is formed by a strait about two miles wide, that separates Penang from the opposite Quedah coast on the Malayan peninsula, and the whole navy of Great Britain might find shelter therein. The ea is placid throughout the year, and the periodical effects of the monsoons little felt, the winds partaking more of the character of land and sea breezes. When first known to Europeans, the island appeared quite untenanted, covered with forests, and considered as a part of the possessions of the king of Quedah on the contiguous coast. In 1785, captain Light, the commander of a "counry ship" in India, having married the king of Quedah's daughter, received a gift of the island as marriage portion. Captain Light transferred it o the East India Company, who having entered nto a treaty with his Quedah majesty agreed to ay 6000 dollars annually to the king, which in 800 was raised to 10,000, in consideration of the ompany receiving the Wellesley province on the ain land opposite Penang, a territory extending hirty-five miles along the coast, four miles inland om the south bank of the Quaila Mudda to the rth bank of the Krian river, latitude 5° 20′ orth.

When the Company's establishment was formed Penang, in 1786, the only inhabitants were a w miserable fishermen on the sea coast. In conquence of the disturbances in the Malayan prinalities, and the encouragement given to settlers the East India Company, a native population of rious descriptions arose. The population of the tlement, including province Wellesley and adjat isles, has been as follows, during the years—

1821	38,057	1826	55,116
1822	51,207	1827	57,986
1824	53,669	1828	60,551

The bulk of the inhabitants consists of Malays, ulias, Chinese, Bengalese, Burmese, &c., the ropeans and their descendants forming only about e hundred.

The trade of Penang is carried on with Calcutta, dras, Bombay, England, China, Java, Ceylon, m, Tenasserim coast, Acheen, Delhi, Quedah, l a few petty native ports. The total value of ports into Penang were—

In 1828-9	S. rupees	52,22,872
Exports from ditto		36,00,900
Excess		16,22,972

The imports and exports of specie for the same year were—

Imports	S. rupees	8,32,232
Exports		7,19,896
Excess		1,12,356

Of the imports, opium alone consists of upwards of seven lac of rupees; the other items are comprised of the various produce of the Straits, or of India and British goods, the trade being one of transit. Birds' nests for Chinese soups is one of the most important articles.

Penang has been a spice island from the period nearly of its first settlement. Pepper engrossed the consideration of capitalists for many years, and until the price fell so low that the returns no more than repaid the outlay. But previous to this check another resource of gain opened by the introduction to the island of the nutmeg and clove tree. In 1798 a few spice plants were imported from the Dutch spice islands; but in the year 1800 there were brought from Amboyna 5000 nutmeg and 15,000 clove plants. In 1802 a further and larger number arrived. This consisted of 25,026 seedling nutmeg trees, and 175 plants of ages varying from four to seven years. Shortly before this last period a government spice garden had been established, embracing 130 acres of land, lying on the slopes which skirt the base of the hill near Amie's Mills, a romantic spot, and well watered by a running stream now called Ayer Putih. This plantation, in some respects a mere nursery, contained, in the above year, the number of 19,628 nutmeg plants, varying from one up to four years old, 3459 being four years of age. There were also 6259 clove trees, of which 669 were above six and under seven years old. In the same year, 1802, Mr Smith, the honourable Company's botanist, reported that he had imported in all to the island at that date 71,266 nutmeg and 55,264 clove plants, out of which a few were reserved for the botanical gardens at Kew, Calcutta, and Madras. Most of the plantations now in a productive state have been created by plants raised from nuts yielded by trees of the original importations, and a number of nutmeg trees which had been planted on the face of a hill and abandoned, were, after a lapse of about four years, rescued from thick jungle and found to be in a lively condition and in bearing. The wild nutmeg tree is indigenous to Penang, being an inhabitant of the hills. It is a tall forest tree, and bears a more oval shaped fruit than the true nutmeg tree. Both the nut and mace are less pungent and more astringent than the true spice, yet the Chuliahs have been in the habit of gathering them and selling them in the native bazaars.

In 1818, the bearing nutmeg trees on the island were estimated to be 6900. Since that period spices have been more extensively cultivated. There are now upwards of thirty spice plantations at this settlement, including province Wellesley, and these may be classed as follows:—Five plantations containing from 4000 up to 20,000 trees. Eight from 500 up to 10,000 trees. Seventeen from 50 up to 2000, containing in the aggregate about 8,000 trees, of which number 45,000 are estimated to be in bearing. When Bencoolen was ceded to the Dutch, the plantations there were estimated to contain 25,000 bearing trees only. The gross annual produce from the plantations may be roughly estimated at 130,000 lbs., but young trees are yearly coming into bearing to swell this quantity; should the cultivation meet with no serious interruption, it may perhaps in time supply the whole of the English market with spices.

The government of Penang, Malacca, and Singapore, is subordinate to the presidency of Bengal. As a commercial and maritime station Penang has many advantages; it serves as an entrepôt for the various produce of China, the eastern islands and straits, the native merchants from which take back in return British and India goods. It was at one time contemplated to form an extensive arsenal and ship-building depot at Penang, and indeed several fine ships were built there, but the object was ultimately abandoned. At present Penang serves as a rendezvous for our naval squadron in the Indian seas, for which its position, healthiness, and abundance of provisions, admirably qualify it.

PENCIL, (*a*.) The marking material of what are called black-lead pencils is plumbago, or graphite, a compound of carbon and iron, in the proportion of nine parts of carbon to one of iron. This mineral is of a dark iron-black colour, passing into steel gray. It occurs in a massy form, in kidney-shaped lumps, varying from the size of a pea to much larger lumps, and is found in beds of quartz, and in masses of calcareous earth. It has a glistening metallic lustre, and the fracture presents a texture somewhat between scaly and granular. The large masses are slaty in their appearance, and occur generally in distinct concretions. It takes a considerable polish by rubbing, and, as is well known, gives a dark lead-gray streak when drawn along paper or wood. It is unctuous to the feel and not very brittle, and about twice as heavy as its own bulk of water. The large quantity of carbon which it contains, renders it peculiarly fitted to the purposes of the chemist, in the form of crucibles, as it will bear an intense heat. The other purposes to which it is applied, are to relieve friction in the axes and pivots of wheels. Its power this way may be illustrated by rubbing a button first on a plain board, five or six times, and applying it to a bit of phosphorus, the latter will immediately burn. When rubbed on a surface covered with plumbago, double or treble the friction will be required to produce the same effect. Plumbago is also used to give a polish to shot and gunpowder, to give a preservative coating to cast iron, and to mix with clay to form a lining for furnaces. At North Carolina shingles are coated with a mixture of black lead and oil, which is said to be an excellent preservation against fire. For all these latter purposes, however, coarse and impure black lead is employed.

There is only one mine of plumbago in England. It is situated at Borrowdale on the side of Seatallor Fell, a lofty mountain in Cumberland, about eight miles south of Keswick.

In the reign of Elizabeth there was a mine of copper and lead in the immediate vicinity, which was worked by some Germans; but on finding some small veins of gold and silver in the mine, a contest arose with the crown as to who should possess the precious metals; Elizabeth gained the contest, and the Germans soon afterwards left the country. About that period, however, the Borrowdale black-lead mine was discovered, and soon drew attention to its valuable contents. Its celebrity gradually increased, and with it an extensive system of purloining. Sometimes the workmen in a neighbouring mine would cut through into the black-lead mine and carry off quantities of the contents. At another time a party of miners overcame a guard placed at the entrance of the mine and kept possession of the whole place for several days. An act of parliament was obtained in the last century, inflicting severe penalties on all depredators, and since then an improved mode of protection has been devised.

The entrance to the mine is about [illegible] feet from the level of the ground, from which spot there is an excavated cavity, extending [illegible] feet horizontally into the body of the mountain; this passage has a railway laid along its whole length, and is used to convey the ore from the bosom of the mountain to the entrance.

Mr Parkes, who visited the mine in 1814, gives the following account of it:

"There two entrances to the mine—a small one by which the workmen descend by means of a flight of steps, and the other is a large horizontal one, capable of admitting hand carts and wheelbarrows for the removal of the rubbish and loose earth by which the black lead is enveloped, or through this entrance the water passes off which constantly runs through the mine. In order to secure the vast treasure which is contained within this mountain, the proprietors have now erected a strong brick building, consisting of four rooms on the ground floor, one of which is immediately over the opening by which the workmen enter the mine as they go to their work. This opening is covered by a trap door, and the room connected with it is called the dressing room, for when the men enter it, they strip off their usual clothes, and each of them put on a dress suitable for working in a mine. The men work six hours each, and then they are relieved by others. As the black lead is [illegible] it is put into firm casks which hold about one hundred and twelve pounds each, and these are sent by waggon to the warehouse of the proprietors in London. Formerly, this mine was opened but once in seven years: but in consequence of the demand being greater, and the quantity which they have discovered not being so large, it has been found expedient to open and dig for ore during six or seven weeks every year. During this time the mine is guarded night and day. In consequence of the mines having been opened in late years every summer, they now raise all the black lead they find, and then the mine is securely shut in the following manner:—The workmen wheel back the rubbish which had been removed at the opening of the mine, and this is laid on in a continued line to the amount of some hundred cart loads, which securely blocks up both the passages into the mine. The door is then locked as well as the door of the house, and all the men then leave the premises in a state of safety; for the mass of rubbish which is thus wheeled in at the large door, dams up the small rill of water which usually flows through the mine, and thus has the effect of flooding it completely. Thus, if an attempt were made to break the house and enter the mine by that road, the robbers would find that the water had risen to such a height as would drown any individual who should attempt to search for the ore."

Readers may be surprised at the extraordinary caution displayed in every part of these processes, as described by Mr Parkes, to prevent purloining; but this surprise will cease when we consider the value of the ore; the market price of the best black lead being nearly half the price of pure silver, about two guineas per pound. Various shafts are excavated in this mine, some of which appear to be exhausted, which occasions a search for new veins in other directions. One mass was discovered in 1803, measuring twenty-one yards and a half in length, and two and a half in diameter.

The property of this mine is shared between a few individuals, and to show its great value, Mr Parkes states that in sixteen years, from 1798 to 1814, 2552 casks, of one hundred and twelve pounds each, were procured from this mine: of which 736 were fine, and 1816 coarse. This we shall find to give an average, one year with another, of 17,864 bs.; indeed, the nett profits have been known to be between 20 and £30,000 in one year. The eason why this mine is so particularly valuable, is to be found in the circumstance that the ore requires scarcely any labour to fit it for the market, it being originally almost in a pure state.

Perhaps one of the most remarkable circum-tances connected with plumbago is the mode in which it is sold. After the quantity necessary for upplying the market during the ensuing year is xtracted from the mine, and the latter closed up, he product is carried in small fragments of about hree or four inches long, to London, where it is xposed for sale at the black-lead market, which is eld on the first Monday of every month, at a pub-c house in Essex street, Strand. The buyers, who amount to about seven or eight individuals, xamine every piece with a sharp instrument to as-ertain its hardness, those which are too soft being ejected. The individual who has the first choice ays forty-five shillings per pound, the others thirty illings. But as there is no addition made to the rst quantity in the market during the course of he year, the residual portions are examined over nd over again, until they are exhausted.

Thus much for the black-lead. The wooden se or exterior of black-lead pencils is usually ade of cedar. Of cedar-trees there are many rieties, but the red cedar used for pencils is the irginian cedar, (*Juniperus Virginiana,*) of North merica.

To prepare the cedar for the pencils, it is cut by circular saw into four-sided strips of a proper ngth, and are so arranged as to thickness that two them together form a square of which one piece is icker than the other, so as to admit the groove t to receive the lead, to be confined to one piece ly—this groove being made by a common plough ane.

The lumps of plumbago are cut into slices about e thickness of a shilling, by a thin circular saw; e slices being of various sizes, from one to two hes long, and varying in breadth.

In preparing the cylindrical leads for the "patent" ncil cases, for which Mr Mordan took out a pa-nt, the plumbago slices are cut into square prisms little larger than are ultimately required; and se prisms are brought to the desired cylindrical m by a gradual process of change, produced by ingenious contrivance. A series of three dif-ent sized circular holes are cut in pieces of ruby; first of which is of such a size as to convert square prism of black lead into an eight-sided sm, by cutting off the sharp edge: this eight-ed prism is then converted into one of sixteen es, by thrusting it through the next smaller hole: lastly, the cylindrical form is given by the third e which is just the size required. The manner of thrusting out the lead in a "Mordan's" pencil-case with a little pin inside, will give a good idea of the action of the wire and tube in the above process.

The rubies are worn out in three or four days. Steel does not last above as many hours. So that the ever-pointed pencils are necessarily costly, six of them being sold for 2s. 6d. If they are cheaper than this we may be sure that they are adulterated. In Paris, when you buy a sheet of paper in a stationer's shop, some of these pencils are added to the purchase. Now these are formed of a mixture of plumbago, fuller's earth and vermicelli.

There is no patent which has been more infringed on than that of Mordan's, for ever-pointed pencils. Birmingham is the source of this infringement, where they are sold as low as three farthings each, formed of composition. A thousand persons are now engaged in the manufacture of these pencils and cases.

To return to the cedar pencils:—One edge of a slice of plumbago being made straight and even, it is dipped in glue, and inserted into the groove cut in the thicker half of the cedar stick. With a sharp tool a cut is made on each surface of the slice, close to the wood, and the piece can then be broken off, leaving a little prism of lead in the groove. The straight edge of the slice is again dipped in glue, and inserted at the end of the first piece, and again cut off, till the whole length of the groove is filled. The surface of the wood is then smoothed down level, and the other half is glued on, thus making a square black-lead pencil.

The square pencil is brought into the cylindrical form by passing it through a hole in an iron or steel puppet of the exact size of the pencil, and forced along by the workman. On the other side of this puppet is a revolving apparatus, which cuts the pencil round; it consists of two guages and a small plane iron, revolving round an open centre. Beyond this is a cylindrical hole in a steel plate; as soon, therefore, as the first edge of the pencil is cut round, it is forced into this circular hole, and before the workman has lost the means of pushing it forward at the end that is square, the cylindrical end is pushed through the circular hole, so as to enable him to seize it with a pair of wooden nippers. It is thus pushed and drawn entirely through, and comes out cylindrical and polished, for the hole being a little smaller than the pencil, the latter is compressed in the act of passing through.

The pencils usually hawked about the streets of London are made with the powder of black lead, mixed with melted sulphur, and then poured into moulds, which are frequently reeds or rushes. Common carpenter's pencils are formed in this way, and answer well enough for the purposes to which they are applied. This mode, however, relates to those common pencils in which the lead (so called) is unusually thick; but the most successful attempt at deception is where the pencil has all the outward form and semblance of being well made, but where a process of anatomization shows the purchaser that the amount of black lead is marvellously small,—the central part of the groove being filled with a different substance. In common pencils, gum-arabic and resin are often mixed with the plumbago.

Genuine cedar pencils must cost at least sixpence each. Pencils of a spurious kind are however, sold as low as 4½d. per dozen. The melting or softening of the lead when held in a candle, or ap plied to a red-hot iron, and yielding a blueish flame with a strong smell like that of burning sulphur, will at once detect the nature of their composition. Pencils so made are of a very bad kind; they are hard, brittle, and do not cut or make a mark freely, either on paper or on wood, rather cutting or scratching them than leaving a coloured stroke.

Drawing pencils are distinguished by the hardness or softness of the selected specimens of plumbago from which they are manufactured, and, accordingly, those made from the hard mineral, have H or H H stamped upon the cedar, and those of a soft or very soft nature are distinguished by B or B B, technically, however, B and double B, as in the former case H and double H.

Black-lead pencils appear to have been known for nearly two centuries, for a writer of about 200 years ago, says,—"Of late black lead is curiously formed into cases of deal or cedar, and so sold as dry pencils, something more useful than pen and ink."

PENRITH; an ancient market-town in the county of Cumberland, situated near the river Pellerel on the north, and the confluence of the Emont and the Lowther on the south, 284 miles from London, and 17 from Carlisle. During the wars between England and Scotland, Penrith frequently changed masters, and in the rebellion of 1745, the Highlanders quartered here. In the church-yard are shown two stone pillars of unknown antiquity, called the giant's grave, and a single stone called the giant's thumb. There are some manufactories here of woollen and cotton goods, and markets are held on Tuesdays and Saturdays. Population of town and parish in 1831, 6059.

PENS, WRITING PENS, (*a.*) The principal birds from which quills are obtained for making pens are the goose, the swan, and the crow. Pelicans also furnish a portion of quills. In 1832, the number of quills entered for home consumption was 33,668,000, the greater part of which came from the Netherlands and Germany. Immense quantities are also imported from Russia and Poland, where flocks of geese are kept for their quills alone. A goose, properly managed, furnishes about twenty quills in the year. The quills are the large feathers taken from the ends of the wings. In their natural state, they are covered with a membranous skin, and have a toughness and softness which prevents their being easily split. They are also opaque, and the vascular membrane on the interior of the barrel adheres to it so strongly, that it is with difficulty detached. To remedy these defects, and to fit the quills for their destined purpose, is the business of the quill-dresser. He takes a large bundle of the quills, just as they are taken from the bird, and proceeds to separate them into three parcels,—differing from each other in the size and quality of the quills. The value is estimated both by the length and the thickness of the barrel; those having the largest and longest barrels being called "primes," which fetch the highest price in the market; the next best in quality are designated as "seconds," and the third, or smallest size, are called "pinions." The process of sorting being completed, the workmen proceed to "clarify" the quills, the principal object of which is to remove the membranous skin. The quills are plunged for a short time into heated sand: the heat of the sand makes the outer skin crack and peel off, which is further aided by scraping them with a sharp instrument; while, at the same time, the internal membrane becomes shrivelled up, and [illegible] down to the point of the quill. The barrel of the quill is also hardened and rendered transparent by this process, in consequence of the heat [illegible] or drying up the oily matter resident in it. The latter effect is increased by repeated heating; and when done for the purpose of hardening the quill, is called *dutching*, probably from the circumstance that the process was first adopted in Holland. (The term Dutch pens, is frequently applied to quills that have been passed through hot sand, to remove the grosser fat and moisture, and to render them more transparent.) For the best pens, the process of dutching is repeated several times, but care is necessary, in order that the heating may not be carried so far as to injure the barrel. The quills, after this process, are either of the colour of fine thin horn, or of an impure white, but before they are brought to market they undergo another process, with the two-fold object of giving them an uniform yellow colour, and to make them cut more easily. They are dipped into diluted aqua-fortis or nitric acid, which has the effect desired. It is however thought by some, that the process, although it improves their beauty, injures their quality by making them too brittle, so that the slit is apt to run up on pressing with moderate firmness; for this reason, many persons who write much, such as clerks in mercantile houses, &c. frequently prefer a quill which has not undergone this process, as being more durable. The quills having been thus dressed and finished, a portion of the barb is stripped off, to occupy less room in packing, and the quills are tied up into bundles of twenty-five or fifty each, for the market.

The process of preparing the quills is, however, subject to some variation. Some dressers adopt the following mode. The quills are first soaked, not by immersion, but by dipping their extremities into water, and allowing the remaining part to absorb moisture by capillary attraction. They are then heated in the fire or in a charcoal stove, and are passed quickly under an instrument with a fine edge, which flattens them in such a manner as to render them apparently useless. They are then scraped and again exposed to heat, whereby they assume their original form. This is a remarkable fact, and may be illustrated by taking a feather and crushing it with the hand so as to destroy its old appearance; if we now expose it to the action of steam or a similar temperature, it will quickly resume its former condition.

Many of the quills after this preparation are cut into pens by means of the pen-cutter's knife, and are also trimmed. A pen-cutter will cut in a day two-thirds of a long thousand, consisting of 1200, according to the stationer's computation. A house in Shoe-Lane, London, cuts generally about 6,000,000 of pens yearly; and during the year 1834, notwithstanding the introduction of steel pens, it cut many more than it had done in the previous year. It is calculated by pen-cutters, that not more than one pen in ten is ever mended.

Swan-quills, which are very large in the barrel, are sometimes employed for pens, and though expensive at first, are perhaps, not dearer ultimately than the smaller quills, their length and strength of barrel compensating for the larger charge. Crow-quills are generally employed in drawing and designing, on account of the fine point to which they can be brought. They are particularly useful in [illegible] ind of etching which is intended to imitate rints. Quills may be hardened by steeping them n alum-water, at a boiling temperature, for a few ninutes.

There is a modern contrivance by which six or ight pens may be made out of one large quill. The narrow end, and also the stalk of the pen beng cut off, leaving the barrel only remaining, the atter has a cylinder inserted through it, a little maller than its own diameter. It is then placed n a machine in such a way that two cutting edges ass along the barrel, one on each side, by which the uill is cut longitudinally into two semi-cylindrical alves. These pieces are then placed in a groove vith the convex side undermost, and the edges are nade straight and smooth by having a plane run long them. These half-cylinders of quill are then ut into three or four pieces, according to their ength, and each piece is operated on by the nibing-machine, which is a sort of cutting press. A ew strokes with a pen-knife then brings each little iece to the form of a pen, which, fixed in a hanle, is fit for use.

The first attempt at the construction of permaent pens, appears to have consisted in arming the ibs of Turkey-quill pens with metallic points or ibs. As the friction of the quill pen upon the aper, and the softening produced by the ink, are he causes which wear away the nibs of ordinary ens, it is obvious that metal is better calculated o withstand these two influences than quill. But lthough the metallic nibs greatly increased the urability of the pen, it was at the expense of the lasticity of the quill; and since the durability of he metallic-nibbed pen was not adequate to its dditional cost over the common quill pen, this ethod was soon abandoned.

Pens have been made, from time to time, out of rn and tortoise and other shells. These pens ere of course more expensive than common quills, d nearly all of them more durable. Nibs have ten been formed, somewhat successfully, of preous stones, the advantage of which is, that they e subject to no wear and corrosion. In 1823 essrs Hawkins and Mordan employed horn and rtoise-shell, which were cut into nibs, and softed in boiling water; small pieces of diamond, by, and other precious stones were then embedd into them by pressure. In this way were inred durability and great elasticity. In order to ve stability to the nib, thin pieces of gold, or her metal, were affixed to the tortoise-shell. ns somewhat similar were formed by Mr Doughty; s nibs were rubies set in fine gold. With these ns a person could write as finely as with a crowill, or as firmly as with a swan-quill, or the two des might be combined. These pens possessed nsiderable elasticity, and by their means an unim manuscript, unattainable by means of ordinary ns, could be produced. Pens of this construcn have been in constant use for upwards of six ars, and at the end of that time exhibited no ns of wear, they were as perfect then as ever. using them, however, care is necessary to preve the nibs from contact with hard bodies; they uire occasional washing with a brush in soap and ter. Mr Doughty states that, although they are tly at first, yet, in the end, they will be found nomic, on account of their permanency. To vent injury to the points, in the act of dipping s pen into an ink-stand, Mr Doughty lines the erior of his elegant ink-stands with India-rubber, or places a bottle of that material within the stand, to contain the ink.

Dr Wollaston also constructed pens from two flat slips of gold, placed angularly side by side, and which were tipped with the metal rhodium; others have employed the metal iridium; but these pens have been abandoned on account of their expense, and the great care necessary to their preservation. These pens were, however, very durable, though not equal to the ruby nibs.

Many of the pens to which we have alluded, were sadly deficient in that indispensable quality, elasticity. To supply a remedy to this defect, it was proposed to place springs on the backs of such pens, sliding backwards and forwards to vary the elasticity according to the different hands required in writing. This plan was somewhat successful, but a great objection was, that the ink drying upon the pen, in a great measure neutralized the action of the spring.

Metallic pens appear to have been introduced into various seminaries, from time to time as rarities, among writing materials; they were given as prizes, rewards for merit, &c. But the first mention that we find of *steel pens* for writing, is in 1803, when Mr Wise constructed barrel-pens of steel, mounted in a bone case for convenience of carrying in the pocket. These pens were very dear, and produced to their inventor but a scanty income. For many years, however, Wise's pens were the only steel pens that could be had, and by means of great activity in "pushing a sale" of them, they were to be had at almost every stationer's shop in the kingdom.

About 1826, the celebrated Perryan pens first appeared. Mr Perry may be regarded in the light of a great improver; many of his pens are ingenious and original in construction. He arranges his pens into genera and species, advertises their beauties and their merits in prose and rhyme, and has thus, not altogether undeservedly, acquired fame and renown, and, we doubt not, profit, to which, years ago, a mere pen-maker would not have aspired. Mr Perry first overcame the rigidity complained of in steel pens generally, by introducing apertures between the shoulders and the point of the pen; thus transferring the elasticity of the pen to a position below instead of above the shoulder. This was the object of his patent of 1830. In 1832 further improvements suggested to him the propriety of seeking a second patent, which he obtained for a pen now bearing the odd cognomen of "The Double Patent Perryan Pen." Perry's "Regulating Spring Pen" is furnished with a sliding spring, which increases or diminishes its flexibility, according as it is placed farther from or nearer to the point. In another case, Mr Perry employs a thread of India-rubber round the nibs of his pens, the yielding of which allows the points to open in proportion to the pressure.

One of the most extensive manufacturers of steel pens is Mr Joseph Gillott, of Birmingham. This gentleman employs three hundred pairs of hands, and consumes fifty tons of steel annually. Now one ton of steel is sufficient to make about two millions of pens; hence this manufacturer alone furnishes about one hundred millions of pens annually.

The kind of pen made by Mr Gillott is similar to the original pen by Wise. The improvement of the modern maker consists in employing metal of a better quality, and in a thinner and more elastic state; in making the slit shorter, and in carefully attending to the finish and temper of the metal. These improvements have been attended with such a reduction in price, that a gross is now sold for very little more than was formerly charged for one of Wise's pens.

The common "Three-slit Pen" has long been, and still is, a favourite with steel pen writers. Its peculiarity consists in having a slit on each side of the central slit, the elasticity being thereby much increased.

The nibs of all pens increase in breadth by use, so that steel, as well as quill pens, require mending, or rejecting for a new one. The difference is a question of time, for while a quill pen will increase in breadth in an hour, the steel pen may be used for many days without the necessity of mending or rejection. But steel pens may be mended by means of a fine file or an oil-stone, by which the nibs can be brought to points sufficiently acute for the purposes of the writer; but the present low price of steel pens renders it very questionable, whether the time employed in mending them would not be thrown away.

Mr Gillott has taken out a patent for an improved pen, the object of which is to remedy the defect complained of, that the nibs increase in breadth by use. In the new pen, the nibs are made parallel-sided for about one-eighth of an inch long, the remaining portion being cut in the usual curved manner, so that one-eighth of an inch may be worn away without increasing the breadth of the nibs. We have not used any of these pens, but it occurs to us, that by the above means the equable opening and closing of the nib during writing cannot be insured, that the ink would not flow down in sufficient quantity, and that unless the pen were held in one particular direction, the equal wearing away of the nibs would not occur. We should rather fear that the pen would often act the part of a chisel, and dig into the paper instead of moving over its surface; but these objections are offered without ever having used the pen which suggests them.

The oblique position in which the pen is held induced Messrs Mordan and Brockeden, in 1831, to make their *oblique* pens, in order that the two sides of the nib should bear equally on the paper. The form of this pen is that of a bird's head and bill; the slit, or mouth of the bird, is the part employed in writing, and this slit is inclined, at an angle of 35°, to the general direction of the pen. They hold a great deal of ink, and their use is pleasant to the writer.

Other pens, called *Lunar* Pens, have been adopted. Their under surface being large and concave, a great portion of ink is taken up by them, and thus the writer's time is economized.

Mr Gowland has invented a pen with an additional nib, called the "Three-nibbed Slit Pen." The additional nib is formed by cutting it out of the shank, and turning it back over the nibs. This pen is manufactured by Mordan, as also "Mordan's Counter-oblique Pen." Both these pens hold much ink, and the awkward appearance of obliquity in the bird's-head pen is removed, while, at the same time, the oblique effects are preserved.

There are many other forms of steel pens, which we need not stop to describe, since the examples already given will afford to the reader a sufficiently accurate idea of their forms and uses. We proceed, therefore, to perhaps the most interesting portion of this article, viz., the processes by which [illegible] pens are manufactured.

The steel with which the pens are made is rolled into very thin plates; it is then cut into slips about four inches broad and three feet long, then annealed for fourteen hours, and again submitted to the roller; the thickness of these bands is not greater than $\frac{1}{100}$ of an inch. The bands are then passed under a stamping-press, and pieces of the proper size for the pens are cut out with great rapidity. These pieces are called *blanks*, or *flats*, and are so cut out, that the fibres of the steel shall run in the direction of the length of the pen. The blanks are now submitted to the action of a hardened steel punch and matrix, of the exact size and shape of the pen, and which are attached to a powerful fly-press. The pens are then softened by being put into an iron box containing tallow, the box is placed in a furnace and equally heated. When the box is withdrawn, the pens are emptied upon hot ashes and covered with the same, and so allowed to cool gradually; by this means they are sufficiently soft for the subsequent processes. They are then marked for the slits; this is done by means of an extremely fine-edged chisel, brought down separately upon each pen, and so admirably adjusted that two-thirds only of the substance of the pen is cut through. The edge of this chisel is finer than any razor, but much harder, because it will perform its office for a whole day without renewing its edge; this superior quality is given to the steel by hammering it for several hours. This is an important fact, and seems to have been discovered by the pen-makers. When the other slits and openings have been made, and the maker's name stamped, the next operation is called raising, by which the proper shape is given to the pen by means of a metallic punch and die, accurately fitting each other, the two being the exact form of the pen.

The pens are now hardened by being heated to redness, and being then plunged into cold oil, which must be at least three feet deep. The oil in a few weeks loses its properties and becomes charred. The next operation is cleaning and polishing; this is effected by a very curious machine. It consists of a tin cylinder, eight or nine inches in diameter, and three feet long, with a hole in the middle of its length, for putting in and taking out the pens, which hole is covered by a lid. The cylinder is hung on joints at each end to cranks formed one on each of two axles furnished with a fly-wheel, and one of them with a handle. As this latter is turned, the cylinder is thrown up and down and backwards and forwards, and the pens are agitated in a manner similar to [illegible] in a bag. This motion is continued for [illegible] when many thousands of pens, by rubbing against each other, are found to be entirely deprived of any roughness which might have [illegible] on them, and which, though invisible to the eye, might offer serious impediments to free writing. They are now tempered by being placed on a furnace-plate, and as soon as they have acquired a bright blue colour they are removed. The colour indicates the best temper for the pens, and is due to a thin film of oxide formed on the [illegible] were they heated in vacuo, or in any [illegible] containing no oxygen, the blue colour would not appear. The last operation consists in [illegible] ing the slits, which is done by pressing the [illegible] suddenly with a pair of pincers. the [illegible] ras cut only two-thirds through, then suddenly opens.

It is calculated that the total quantity of steel employed in this manufacture, amounts to 120 tons per annum, from which upwards of 200,000,000 of pens are produced.

There is, however, a considerable waste of material in this branch of art. The pieces of steel cut out of the pens cannot be applied to any use; it s so thin that it cannot be welded, and it cannot be melted, because it takes fire and burns, in consequence of access of air between the thin pieces.

Pen-knives. — The extraordinary demand for steel pens within the last few years, in which the aid of a pen-knife is not called for, would have nduced us to think that the use of quill pens must have greatly diminished, and that pen-knives must ikewise have become much less in request. But uch does not appear to be the case.

Sheffield is the great workshop which supplies lmost all the world with knives. The hammering f the steel bar which is to form the blade, is carried on in the *smithy*. A boy is employed to keep everal bars of steel heated, or being heated at one ime; and he hands them to the striker or hammerman, one at a time, so that he is kept constantly t work. A pen-knife-blade is formed by two eatings. In the first place, that part which we all the blade is fashioned by hammering, and then hopped off the end of the rod. It is then again eated in the forge, taken up by a pair of tongs, nd the part which is called the *tang* is formed; his tang is the part by which the workman holds while grinding the blade, and which is ultimately nserted in the handle. The whole is then smithed, r smartly hammered after it has ceased to be soft, n order to close the pores, and produce the greatest possible degree of density. The nail-mark—sed when "opening" the pen-knife—and the aker's name, &c., having been struck upon it, it ready for hardening. The steel springs for the ick, and the iron casings for the inner sides of the andle, are made by workmen ranking a degree ower than the blade makers.

When the blade is properly hammered, it is next ardened and tempered,—processes which, though xtremely simple in themselves, require the nicest ct and judgment, as upon them the excellence of he future knife greatly depends. Steel is commonly hardened by being plunged, while red-hot, nto cold water, and afterwards tempered by being eated until the surface assumes a particular tinge, arying from a light straw colour to a deep blue, ccording to the nature of the instrument which is eing made.

After the blade has been hardened, it is, in most ases, carried directly to the grinding mill, or heel, for the purpose of being ground. Before e extensive introduction of steam power, the inding wheels were turned by water; but now eam has usurped the place of water, in this as in any other instances. The grinding stones revolve on horizontal axes, and are of various sizes r different kinds of work. The blade is frequently wetted, and applied to the stone in a way hich may be easily conceived. The pen-knife hen ground, is worked on a trundle or *glazier*, hich is a wooden wheel about four feet in diameter and two inches thick. On the edge of this heel is a coating of soft metal, consisting of lead d tin, about an inch in thickness; and on this, wdered emery is applied.

The next process is that of *polishing* or *buffing*, the blade, which is done on a wheel similar to that last described, except that the surface of the wheel is covered with buff leather instead of emery. On this leather some very fine polishing powder is applied, and the blade polished.

The blade now passes into the hands of the workman who is to finish it and finally place it in its handle. The workman wears a breast-plate in front of his body, fastened round him with straps: the breast-plate contains a piece of steel with several small indentations. These are to receive the blunt end of a borer which is to make small holes for rivets, and for the hole for the pin upon which the blade works at the joint. An ingenious instrument called the *boring-stick*, gives a rapid rotatory motion to the borer, which is a sharp instrument, and thus enables it to penetrate the metal, applied against the sharp end of the borer.

The materials employed for handles are almost innumerable. Gold, silver, ivory, mother of pearl, tortoise-shell, horn, bone, cast-iron, &c., are employed, according to the costliness of the article. The forms of handles are almost as various as their materials, as is well known.

When the blade and the handle, with its metallic lining, spring, &c., are properly made and the holes bored, the whole is pinned together, (loosely at first, till, all the parts being exactly fitted, the knife is found to work properly,) with pieces of wire, and rivetted with the hammer. The sides of the handle, if of horn, ivory, or shell, are then filed and scraped, and then polished on a wheel covered with buff leather. A small shield, either of silver or some other metal, is frequently inserted in one side of the handle. The groove or depression which is to receive this shield is made in a manner somewhat resembling that in which the holes are bored.

PENZANCE; a sea-port town in Cornwall, in the parish of Madron, and hundred of Penwith, situated on the north-western shore of Mount's Bay, ten miles from the Land's End, and 280 S.W. from London. It is the port for all Mount's Bay, and the market-town for a large surrounding district. The amount of tonnage which entered the port of Penzance and its outports during 1837 was 49,943, of which 5179 tons were in the foreign, and 44,764 in the coasting trade. The amount which sailed outward in the same year was 17,441, of which 386 tons were in the foreign, and 17,055 in the coasting trade. The amount of duties in that year was £16,839. Penzance is distinguished for the mildness of its climate, and its early garden produce. It supplies large quantities of vegetables, fish, pork, butter and poultry to distant markets. By the municipal reform act of 1835, the town annually elects the corporation, consisting of a mayor, six aldermen, and eighteen councillors. Population in 1831, 6563; including parish of Madron, 8621. A very full and elaborate statistical account of the parish of Madron and borough of Penzance, digested from information furnished the Statistical Society of London, by Richard Edmonds, Esq. jun. of Penzance, will be found in the second volume of the Journal of the Statistical Society of London, part iv. July, 1839.

PETERBOROUGH; an ancient but small city in the county of Northampton, seventy-nine miles from London. It has a well supplied market on Saturday. The houses are mostly the property of the earl Fitzwilliam. Population in 1831, 5553.

Peterborough derives its name from an abbey founded here during the Heptarchy, and dedicated to St Peter. The present edifice, now the cathedral of Peterborough, was begun in the year 1117, and finished to a certain extent in 1143. In 1200, the abbey being in a state of poverty, king John appointed Acharius, prior of St Albans', as abbot, by whose care it began to flourish, and in 1238 it contained one hundred and ten monks. It is supposed, that soon after this, the beautiful *west front* of the Cathedral was erected. By the west front must be understood, the two square towers, with lofty pinnacles, at the north-west and south-west corners; the three noble gothic arches which stand between these towers; and the portico between the arches and the west wall of the church. Within each of the two towers is a winding staircase, leading up to the roof of the portico. That portion of the cathedral, called the *new building*, which is at the east end, is considered the most modern portion of the whole, the date of it being about A.D. 1500.

The dimensions of the principal parts of the building are as follows:

	Feet.
Length of the whole Cathedral, measured on the outside,	479
Length of the Transept from north to south, . . .	203
Breadth of the west front, ...	156
Height of the Lantern, ...	150
Height of each Gothic arch at the west front, . . .	82

In 1534, Chambers, the then abbot, together with the prior and thirty-seven monks, protessed, under their hands and seals, fidelity and obedience to king Henry VIII. and acknowledged him to be supreme head of the church of England. Peterborough then became a bishopric, and its abbey a cathedral. In the following year, Catharine, the first wife of Henry VIII., died at Kimbolton Castle, Huntingdonshire, and was buried on the north side of the choir, nearly opposite to the bishop's throne. In the same cathedral, in July 1587, by torchlight, the remains of the unhappy Mary, Queen of Scots, were consigned to a tomb on the south side of the choir. Fotheringay castle, where she was executed in the February preceding, is about ten miles from Peterborough. After the body had remained in its tomb for about twenty-five years, her son, James I., removed it to Westminster Abbey; but the superb monument raised to her memory continued entire.

The income of the bishopric of Peterborough is comparatively small, being, according to the parliamentary return made by the bishop, only £3518. By a recent law, it is to be augmented from part of the revenue of the see of Ely, and the archdeaconry of Leicester is placed under the episcopal jurisdiction of Peterborough.

PETERHEAD; a burgh and sea-port of Scotland, in the district of Buchan, and county of Aberdeen, situated upon the most easterly point of the mainland of Scotland, thirty-two miles N. by E. of Aberdeen, and 145 N. E. of Edinburgh. It was erected into a burgh of barony in 1593 by George, earl Marischall, and the superiority of the town belonged to the Marischall family till forfeited in 1715. In 1728, the governors of the Merchant-Maiden Hospital of Edinburgh acquired the greater part of Peterhead by purchase, and, as superiors, they had the nomination of the magistrates, until the passing of the burgh reform bill in 1832, when the municipal government was vested in twelve councillors, who from their own number choose a provost, three bailies, and a treasurer. The weekly market day of the town is Friday; and there are two annual fairs. The town is built in the form of a cross, and is divided into four districts, which are united to each other by a continuation of [illegible] these districts are respectively called the [illegible] Ronheads, Keith Inch, and Peterhead proper. The houses, which are built of granite, so abundant in various parts of the county of Aberdeen, are neat and comfortable, and many of them commodious and elegant. The streets of recent erection are well laid out. The harbours of Peterhead are safe and commodious, and accessible both from the south and north, being [illegible] equally distant from the Firths of Forth and Moray. To vessels frequenting the east coast of Scotland, as well as to the regular trade of the port, they afford excellent protection. At the extremity of the south bay a light-house is erected. The shipping belonging to the port amounts to about 13,000 tons, and about 250 vessels annually seek shelter in the harbour. The exports chiefly consist of agricultural produce and the produce of the fisheries; also of granite from the neighbouring quarries. The imports are groceries, flax, [illegible] timber, coal, lime, &c. Peterhead has been long engaged in the whale and herring fisheries. It lately owned twelve vessels in the whale trade alone, with 3629 tons. In 1837, [illegible] boats were employed in the herring fishery, and upwards of 40,000 barrels of herring were caught. The district of Buchan, of which Peterhead may be denominated the capital, forms an excellent resort for those who require the bracing effects of sea bathing and sea air, and in its vicinity are certain chalybeate waters long esteemed in cases of general debility and nervous affections. Population of town and parish of Peterhead in 1831, [illegible]. See a [illegible] History of Peterhead, composed, printed, and published by the author, Peter Buchan.

PICKEN, Andrew, the author of the "Dominie's Legacy," was born at Paisley in the year 1788. His father was an eminent manufacturer in that town, and educated him for the mercantile profession. At an early age he visited the West Indies; but finding that the business in which he was engaged afforded no very bright prospects, he returned to Europe, and obtained a confidential situation in the bank of Ireland. To the great regret of his Irish friends, he subsequently removed to Glasgow, and entered into business. Here he first came before the world as an author, by publishing "Tales and Sketches of the West of Scotland," a work which had great local success. In this volume, appeared for the first time the pathetic story of "Mary Ogilvie," which showed no common power of combining the ordinary incidents of life, into pictures of intense and harrowing interest. Soon after the publication, circumstances induced the author to quit Glasgow, and he removed to Liverpool, where he established himself as a bookseller. The [illegible] of speculation, which in 1826 seized even on those who were deemed paragons of worldly wisdom, found too ready a victim in Picken, to whom the world of business was as a sealed volume; he [illegible] of the wild projects of the time, and lost his all. But like Francis I., he might have boasted that honour still remained; when his books were inspected, the creditors with one voice, bore honourable testimony to his integrity, and expressed their sorrow for his misfortunes. They would readily have aided him in commencing business new, but literature had now marked him for her wn, and he came to London with the manuscript f a novel; the composition of which had been he amusement of his leisure hours, and subsequently his chief consolation in difficulty and distress.

"The Sectarian," as this novel was called, excited considerable interest at the time of its first ppearance; it showed great skill in what may be ermed the morbid anatomy of the mind, and one icture, of madness caused by religious melancholy, which was drawn from nature, gave considerable ffence to persons who are too apt to confound an ttack upon fanaticism with hostility to religion. This error, and in the present instance, no greater rror could be made, prevented "The Sectarian" rom obtaining the success which its merits de- erved. But though the circulation of "The Sec- arian" was limited, it had the effect of making the uthor known to the editors of the principal perio- licals, and from this time, Mr Picken became a egular contributor to the leading Magazines and Reviews. The publication of "The Dominie's egacy," in 1830, finally established his fame as he historian of Scottish humble life; we say the istorian rather than the delineator, because the Dominie speaks not of what he has imagined, but f what he has seen, felt, and understood, almost rom his infancy; and we remember his characters, nore as those of persons that we somewhere knew, han of personages we have seen described. The work had great success, and its fame has not been njured by time.

Mr Picken's next publication was "The Club Book," to which several of the most popular liv- ng writers contributed. The tales written by he editor, were in his happiest style; that, en- itled, "The Three Kearneys," was founded on ircumstances which he had witnessed during his esidence in Ireland, and it showed that Mr Picken ad thoroughly investigated the mixed character of he Irish peasantry. "The Deer-Stalkers" was lso a tale of great interest; it was dramatized at he Queen's Theatre, and much admired. Soon fter appeared a work on the Canadas, professedly compilation; in preparing this volume, Mr Pic- en received valuable assistance from his friend Mr Galt. This was followed by "Waltham," a ale published in Leitch Ritchie's "Library of omance," and though not very favourably re- eived, displaying, perhaps, higher powers of ought and sentiment than any of his other orks.

In the course of 1833, he published "Tradi- onary Stories of Old Families," in two volumes; signed as the first part of a series, which would nbrace the legendary history of Scotland, Eng- nd, and Ireland. The project excited considera- e interest, and many of the most distinguished embers of the aristocracy offered to aid the thor, by giving him access to their family papers. efore he could avail himself of the ample stores as opened to him, he was attacked by the dis- se which so rapidly terminated his life. On the th of November, 1831, while conversing with s son, he was suddenly struck down by apo- exy, which terminated in death, on the 23d of e same month.

A little before his last illness, he had completed novel, which he regarded as by far the best of s productions. It was published after his death, d is entitled, "The Black Watch," which was the original name of the gallant 42nd regiment. The date of the story is about the time of the battle of Fontenoy.

The character of Picken, like that of the Dominie of his own tales, was simple, affectionate, retiring; dwelling apart from the world, and blending in all his views of it the gentle and tender feelings reflected from his own mind.

PILGRIMAGES. The custom of making pilgrimages to spots of reputed sanctity prevailed to a great extent in the latter ages of paganism, and coupled with a reverence for relics was transferred at a very early period to the Christian church. Journeys of this kind to Jerusalem are mentioned in the third century; and in the fourth they are said, by St Jerome, to have become common from all parts of the Roman empire. The custom of worshipping the relics of martyrs also prevailed in Egypt in the same century, as we learn from Eunapius, who angrily complains that the Christians of Canopus had transferred the homage formerly paid to the Egyptian deities to nauseous collections of bones and relics. It was much later, however, before either practice became established in its full extent, probably not till the time of the crusades. In England there were few shrines or relics of great repute which dated beyond this period. In some of the most celebrated, as that of the Virgin at Walsingham, and the true blood at Hailes, the sacred *matériel* was confessedly imported by the crusaders; while the greatest of all, the shrine of Becket at Canterbury, derived its existence from an event as late as the twelfth century.

The passion of visiting shrines and other sacred places, appears, in the middle ages, to have prevailed pre-eminently in England. In the days of Bede, a pilgrimage to Rome was held to be a "great virtue;" and the number of our countrymen who visited the papal court is said to have excited the sarcastic jokes of the Italians on our catholic enthusiasm. In later ages, the "shadow" of St James at Compostella was chiefly visited by English pilgrims, and appears to have been set up to divert a part of the inundation which flowed upon Rome. In the number of her domestic shrines England also exceeded all other countries. Thirty-eight existed in Norfolk alone, and to one of these, that of our Lady of Walsingham, Erasmus says, every Englishman, not regarded irreligious, invariably paid his homage. The pilgrims who arrived at Canterbury, on the sixth jubilee of the translation of Becket, are said to have exceeded 100,000; a number which, if correctly given, must have comprised nearly a twentieth of the entire population of the kingdom. Even on the eve of the Reformation, when pilgrimage had much declined, it appears, from the report of one of Henry's visitors, that upwards of 500 devotees, bringing money or cattle, had arrived the day before he wrote, at an obscure shrine in Wales. These facts give some idea of the extent to which pilgrimages were carried in this country, and impart a peculiar interest to the subject.

The pilgrimages of the middle ages may be divided into four classes—first, pilgrimages of penance or devotion to foreign shrines; secondly, pilgrimages of the same kind to English shrines; thirdly, pilgrimages to medical and charmed shrines; and fourthly, vicarious pilgrimages for the good of the soul of the principal. Other kinds have been enumerated, but these contain all which had any professed reference to devotion.

The practice of making foreign pilgrimages existed in England from the seventh to about the middle of the fifteen century. Few persons of any station or wealth failed during that period to engage in these religious tours, and in later ages they were not uncommon among persons in the middle ranks of life. The Wife of Bath, for example, though but a simple cloth-worker, had been as a pilgrim to Rome, Compostella, and Jerusalem; but the expense of such journeys, and the long absence which they required, must generally have confined them to the affluent: although, in that spirit of restlessness which pervaded the middle ages, persons of the lowest rank sometimes engaged in them, and trusted to chance for support.

The professional costume of a pilgrim is usually described as consisting of a long coarse russet gown with large sleeves, and sometimes patched with crosses; a leather belt worn round the shoulders or loins, a bowl and bag suspended from it; a round hat, turned up in front, and stuck with scallop shells, or small leaden images of saints; a rosary of large beads hanging from the neck or arm, and a long walking staff (the bourdon), hooked like a crosier, or furnished near the top with two hollow balls, which were occasionally used as a musical instrument.

Before setting out, the pilgrim received consecration, which was extended also to the several articles of his attire. On a certain day he repaired to the church, and, after making confession, he prostrated himself before the altar, where certain prayers and masses were said over him, ending with the *Gloria Patri*, *Ad te Domine levavi*, and the *Miserere*. He then arose, and the priest consecrated his scrip and staff, sprinkling each with holy water, and placing the former round his neck, and the latter in his hands. If he were going to Jerusalem, the crosses of his gown were sprinkled in the same way, and publicly sewed upon his garment. The service then ended with the mass, *De iter agentibus;* and, on the day of taking his departure, he was sometimes led out of the parish in procession, with the cross and holy water borne before him. Before commencing his journey, he also settled his worldly affairs, and frequently gave a part of his goods to religious uses. In Blomefield's Norfolk, an instance is cited of a pilgrim who insured the prayers of a religious house during his absence, by a gift of cattle and corn, and gave the reversion of his estates to it, if he should not return. Such acts of generosity had probably a reference to the protection which the church bestowed on these devotees. During their absence their property was secured from injury, nor could they be arrested or cast in any civil process. The most desperate characters respected the sanctity of their profession, and in some instances have been known, after robbing them by the way, to restore all they had taken from them. The pilgrims to foreign places were compelled, by a law of the 9th of Edward III., to embark and return by Dover, "in relief and comfort of the said town;" and, in the 13th Richard II. 1389, at the request of the "barons of Dover," who alluded to this ordinance, the king commanded, that all pilgrims and others, excepting soldiers and merchants, should embark at Plymouth or Dover, and no where else, without special license from the king himself· those, however, who wished to go to Ireland might embark where they pleased. From the reason assigned by the barons for the petition, that "la serche meultz purra estre [illegible] en un port q'en plusours," it may be inferred, that the restriction arose from a desire to check the smuggling, which is said to have been extensively carried on by persons in this disguise.

In the order of foreign pilgrims must be reckoned the palmers; a class of men whose real history and condition is little known, though their name is familiar. According to the most probable account, their designation was derived from the palm (the symbol of Palestine,) branches of which were often brought home by them, as evidence of their journey. The distinction between them and ordinary pilgrims has been defined as consisting in the following circumstances: "The pilgrim had some home or dwelling-place; but the palmer had none. The pilgrim travelled to some certain designed place; but the palmer to all. The pilgrim went at his own charges; but the palmer professed wilful poverty, and went upon alms. The pilgrim might give over his profession, and return home; but the palmer must be constant till he had obtained his palm by death." These distinctions, however, were not invariably preserved; and it would be perhaps difficult to determine if they were so. The profession of a palmer was at first voluntary, and arose in that rivalry of [illegible] which existed in the earlier part of the middle ages. But afterwards, in the tenth and eleventh centuries, it was not unfrequently imposed as a penance, and by a law of Henry I. priests who revealed the confessional were punished by [illegible] perpetual pilgrimages. In some cases, a variety of severe conditions were added to the sentence. Some who were thus condemned were made to wander about almost naked, carrying rings or chains of iron; and others were bound, in all their journeys, to kneel down at short intervals, and beat the earth with the palms of their hands. There can be no doubt that these forms of penance were actually inflicted; but to what extent, at any particular age, it is impossible to ascertain.

The rise of the domestic shrines of England and the decline of foreign pilgrimages, are evidences of the milder character which [illegible] had begun to wear. The spirit and manner of these pilgrimages differed in many respects from those of the former kind. From their diminished distance and danger, and their greater frequency, they had comparatively little of the same solemn preparation or devotional austerity. Few domestic pilgrims, probably, underwent the ceremony of consecration, or travelled in any peculiar costume. This is evident from Chaucer's pilgrims, who are all equipped in their gayest dresses, and exhibit no distinctive sign of their profession in appearance or spirit. They pursue their journey gaily on horseback, and make it an occasion of mirth and enjoyment rather than of religious meditation.

> "Every man in his wise made hearty cheer,
> Telling his fellow of sportis and of cheer,
> And of mirthes that fallen by the ways,
> As custom is of pilgrimes, and hath been many days."

It may be inferred from a petition of the Commons to the king in 1435, that pilgrimages were made by persons in their best apparel. They state, that one John Carpenter, a husbandman, of Brydham, in Sussex, "saying to Isabelle his wife, that was of the age of xvi yere, and had be married to hym but xv dayes, that they would goo togider pilgremage, and made to araye hir in hir best raie, and take hir with him fro the said toune of udham to the town of Stogbton, in the said ire, and there murdered horribly his wyff."

These remarks, however, are chiefly true of the stomary and periodical pilgrimages. In those hich were undertaken spontaneously, from some rong emotion, a severer character prevailed. Mr osbrooke contends, that, in pilgrimages of this nd, it was an essential condition, that the pil-im should walk his journey barefoot; and ere are instances to the last of persons of the ghest rank adopting this painful mode of travelling. one of the pilgrimages of Henry VIII. to Wal-ngham, he is said by Spelman to have walked ither barefoot from Barsham, a distance of about ree miles; and in the same way, the beautiful lenrietta Maria, queen of Charles I., was once ntenced by her confessor to make a pilgrimage om Somerset House to Tyburn, and there to do omage to the saintship of some recently executed tholics. "No longer agon then upon St James is day last past," says Mr Pory, in a letter to Mr lead, dated 5th July, 1626, "those hypocritical ogges made the pore queen to walke a foot, some dd barefoot, from her house at St James to the allows at Tyborne, therby to honor the saint of he day in visiting that holy place, where so many artyrs, forsooth, had shed their blod in defence f the Catholique cause. Had they not also made er to dabble in the durte of a foul morning from omerset House to St James, her Luciferian con-essour riding allong by her in his coach! Yea hey have made her to go barefoot, to spin, to eat er meat out of tryne dishes, to waite at the table nd serve her servants, with many other ridiculous nd absurd penances."

In all pilgrimages of real devotion, the practice f at least walking was common. In one of the Paston Letters, written in 1471, the duke and duchess of Norfolk are mentioned as making a pilgrimage together in this way from Framlingham to Walsingham; and it must have been adopted from necessity in the cases in which entire families made pilgrimages with all the children and servants. Some of the above instances, however, may be said equally to prove the greater severity, or at least decorum, which marked these religious excursions in the upper ranks, and which prevailed at all times, to a degree that would probably not be inferred from Chaucer's picture.

In the pilgrimages of the lower orders, however, his descriptions seem to have been fully justified. A passage quoted by Mr Fosbrooke, from one of the early state trials, gives us a picturesque idea of the gay and social spirit in which they were conducted. The dialogue occurs between a captious disciple of Wickliffe, in the time of Henry IV., and Arundel, archbishop of Canterbury. "Also, sir," he says, "I knowe well, that when diverse men and women will go after their owne wills, and finding out a pilgrimage, they will order to have with them both men and women that can sing wanton songs; and some other pilgrims will have with them bag-pipers, so that every towne they come through, what with the noise of their singing and with the sound of their piping, and with the jangling of their Canterbury bells, and with the barking out of dogs after them, that they make more noise than if the king came that waye, with all his clarions and minstrels. And if these men and women be a month in their pilgrimage, many of them shall be half a year after great janglers, tale-tellers, and liars."

To this the archbishop quaintly replies, that "Pilgrims have with them singers and also pipers, that when one of them that goeth barefoote striketh his toe upon a stone, and maketh it to bleed, it is well done that he or his fellow begin then a song, or else take out of his bosome a bagpipe, to drive away with such mirthe the hurte of his fellowe. For with such solace the travaile and wearinesse of pilgrims is lightly and merrily brought forthe."

The object of a pilgrimage was sometimes of a general and sometimes of a particular kind; and the ceremonial which took place on arriving at a shrine differed accordingly. At Boxley and Hailes the pilgrim underwent a sort of ordeal, which was supposed to determine his spiritual state. At the former place he lifted a small wooden image of St Rumbold, which was artfully pinned to the altar if his offering had been insufficient; and at the latter was shown a phial of the true blood, with a blackened side, which when turned towards him rendered the contents invisible. But these were particular cases; and, generally speaking, a visit to a shrine included nothing more than the ordinary gratification of curiosity or devotion. A tolerable idea of its general nature may be gained from the description given by Erasmus of his visit to Walsingham. His dialogue on this subject is perhaps too fanciful in parts to be implicitly adopted; but there is no reason to doubt the general correctness of its details, the minuteness of which gives it an additional value.

The pilgrims who arrived at Walsingham entered the sacred precinct by a low narrow wicket. It was purposely made difficult to pass, as a precaution against the robberies which were frequently committed at the shrine. On the gate in which the wicket opened was nailed a copper image of a knight on horseback, whose miraculous preservation on the spot by the Virgin formed the subject of one of the numerous legendary stories with which the place abounded. To the east of the gate, within, stood a small chapel, where the pilgrim was allowed, for money, to kiss a gigantic bone, said to have been the fingerbone of St Peter. After this, he was conducted to a building, thatched with reeds and straw, enclosing two wells in high repute for indigestion and headache, and also for the more rare virtue of ensuring to the votary, within certain limits, whatever he might wish for at the time of drinking their waters. The building itself was said to have been transported there through the air, many centuries before, in a deep snow; and, as a proof of it, the visitor was gravely pointed to an old bear's skin attached to one of the beams. After this, he entered the outer chapel, an unfinished building at the time of Erasmus, who describes the high winds from the neighbouring sea blowing through its open doors and windows. Within this stood the chapel of the Virgin; a small wooden building, with a door in its opposite sides, through which the pilgrims entered and retired. The celebrated image of Our Lady stood within it on the right of the altar. The interior was kept highly perfumed, and illuminated solely by tapers, which dimly revealed the sacred image, surrounded by the gold and jewels of the shrine. The pilgrim knelt awhile on the steps of the altar in prayer, and then deposited his offering upon it, and passed on. What he gave was instantly taken up by a priest, who stood in readiness, to prevent the next comer from stealing it in depositing his own offering. At an altar, apparently in the outer chapel, was exhibited the celebrated relic of the Virgin's milk. It was enclosed in a crystal, to prevent the contamination of lips,

> ——— "Whose kiss
> Had been pollution unto aught so chaste,"

and set in a crucifix. The pilgrims knelt on the steps of the altar to kiss it, and, after the ceremony, the priest held out a board to receive their offerings, like that with which tolls were collected at the foot of bridges. The sacred relic itself, Erasmus says, was excessively like chalk mixed with the white of eggs, and was quite solid. The image of the Virgin and her Son, as they made their salute, also appeared to him to give them a nod of approbation.

An incident of a personal kind illustrates the bigotry and intolerance which prevailed at these places. After the ceremony of kissing the sacred milk, Erasmus requested his friend to inquire for him, in the mildest manner, what was the evidence that it was indeed the true milk? The priest appeared at first not to notice the question; but, on its being repeated, his countenance assumed an expression of astonishment and ferocity, and in a tone of thunder he asked if they had not authentic inscriptions of the fact? From the violence of his manner, they expected every instant to have been thrust out as heretics, and were glad to make their peace by a present of money. The inscription which he referred to was found, after some search, fixed high upon a wall, where it was scarcely legible. They contrived, however, to read it; but found it to contain merely a history of this precious relic from the tenth century, when it was purchased by an old woman near Constantinople, with an assurance, from which arose its fame, that all other portions of the Virgin's milk had fallen on the ground before they were collected, while this was taken directly from her breast.

At Canterbury, which Erasmus has also described, there appears to have been less variety of incident. The pilgrim was there chiefly employed in doing honour to the relics of almost countless saints, and pre-eminently to those of Becket. "On the north side of the choir," he says, "the guides opened several doors, and the pilgrim beheld an immense collection of bones of all kinds—skull-bones, jaw-bones, teeth, hands, fingers, &c. which they kissed as they were severally taken out." At his visit an arm was presented to them to salute, with the flesh still upon it, and bloody. In doing honour to the relics of Becket, they kissed the rusty point of the sword that split his skull, and the fissure in the skull itself, exposed for that purpose in a silver case. Near his monument their eyes were gratified with the sight of his hair-shirt, his belt, and trowsers. His neckerchief was also shown them, dirty with his sweat, and spotted with his blood; and even the rags on which he blew his saintly nose, still bearing evidence of their use. Such exhibitions were perfectly consistent with the genius of canonization, and with that love of disgusting subjects, which was not unfrequently mingled with ideas of sanctity.

All pilgrimages to canonized shrines were professedly devotional; but they had often a near relation to some personal want or secular interest of the devotee. This arose from that subdivision of the Romish as of the classical calendar which assigned a tutelary deity to almost every situation or contingency of life; and in consequence filled the country with shrines of a peculiar virtue. The superstition here alluded to is quaintly detailed in a passage in Sir Thomas More's "Dyalogue of the Adoracion of Ymages."

"We set," says the interlocutor of the dialogue, "every saint in his office, and assign him a craft such as pleaseth us. Saint Loy we make a horse-leech; and because one smith is too few at the forge, we set Saint Ippolitus to help him. Saint Appolonia we make a tooth-drawer, and may speake to her of nothing but sore teeth. Saint Sythe, women set to seek their keys. Saint Roke we appoint to see to the great sickness, and with him we join Saint Sebastian. Some saints serve for the eye only, and some for a sore breast. Saint Germain only for children, and yet will he not once look at them, but if their mothers bring with them a white loaf and a pot of good ale. And yet is she wiser than Saint Wylgeforte; for she, good soul, is, as they say, content to be served with oats, peradventure to provide a horse for an evil husband to ride to the devil, for that is the thing she is so sought for; insomuch that women have changed her name, and, instead of Saint Wylgeforte, call her Saint Uncumber, because they reckon that for a peck of oats she will not fail to uncumber them of their husbands."

The enumeration here given might be carried much further. Saint Anne, for example, was supposed to have a peculiar efficacy in recovering lost goods; and Saint Leonard in assisting debtors to escape from prison. St Sebastian was all-powerful against the plague, Saint Petronel against fevers, Saint Genow against the gout, &c. In the same manner every trade had its patron saint; and even the cat-catcher could hope for no success in his profession, without the kindly interference of St Gertrude. From the same local and specific efficacy, some shrines that were unconsecrated enjoyed a repute little inferior to those which could boast of a celestial patron. A singular shrine of this kind existed at Winfarthing, in Norfolk, containing a precious relic, called "the good sword of Winfarthing." It was efficient in the recovery of lost property, and of horses stolen or strayed, and in the still more important office of shortening the lives of refractory husbands. To obtain its interference in this way, the impatient help-mate was simply required to enter the church on every Sunday through the year, and set up a lighted candle before the relic.

The pilgrimages to sanative wells and fountains must be reckoned among those to specific shrines. Springs of this kind, when consecrated, were generally found in the neighbourhood of some chapel or monastery, of their patron saint, within which a part of the ceremony usually took place. The counties of Norfolk and Suffolk contained many wells, of various efficacy at Woolpit, East Dereham, Wereham, Bawburgh, &c. The effect of these wells was probably not always imaginary. In many instances, a medical as well as a religious benefit might arise from the ceremony which the votary underwent. Thus, at Saint Nun's pool, in Cornwall, celebrated for curing madness, the treatment of the patient might, from physical causes, have this effect. The sanative stream was conveyed into a large square cistern, capable of being filled to any depth. The lunatic was made to sit upon the brink, with his back to the water, and, by a sud den blow on the breast, was tumbled headlong into it. Before he could recover himself, he was seized by a strong man, placed there for the purpose, who lifted him in his arms, and whirled him about in the water till he was completely exhausted. When he thus became quiet, it was supposed that his reason was returning, and in this state he was carried into the neighbouring church, where masses were said over him; and if he recovered, as it is said he frequently did, the honour was given to Saint Nun.

In some instances, the imputed efficacy of these wells was of a moral kind. The wells of Saint John and the Virgin at Honiley, in Warwickshire, were celebrated for removing the taint of unchastity. The pilgrimages to them were made by both parties after the birth of their offspring. The man bathed in the well of Saint John, and the female in that of the Virgin, both being filled from the same spring. Having made this ablution, they went to the neighbouring church, and crept on their knees to the shrines of the respective saints, beseeching them to intercede with our Saviour for their forgiveness. They then made an offering at the altar, and the priest gave each a bottle of the water of the spring, as a preservative against future offences. At many of the wells, however, as at the wishing wells of Walsingham, the ceremony consisted in drinking of the waters, after which the devotee knelt upon the margin, repeating the things he desired, and throwing in pieces of gold. In the ancient form, which was purely pagan, crooked pins only were thrown in "to the genius of the spring," or scraps of the garment of the pilgrim attached as a memorial to the neighbouring bushes. This custom continued to the last at Whiteford and other undedicated wells. But when the waters were rescued from their pagan patron, and placed under the charge of Christian saints, it was a natural change to substitute some more valuable gift.

The custom of performing pilgrimages by proxy was perhaps a consequence of the Catholic doctrine, that an individual might, on some occasions, depute his religious duties to others, without detriment to himself. Generally, however, these pilgrimages were performed only after the demise of the person to whom they referred, though a few instances occur of their taking place in his lifetime. Provisions for these post obit pilgrimages are frequently met with in the wills of distinguished persons, from the twelfth to the sixteenth century. In the earlier instances, they were commonly directed to Rome or Jerusalem, and in these cases were committed to priests, who were directed to pray or sing masses at all convenient places by he way. But in later ages, like other pilgrimages, hey were more commonly made to domestic hrines, and appear to have been intrusted to simle laymen. A pious lady, whose will is printed n Blomefield's Norfolk, provides for a pilgrim to isit, after her death, no less than eight different hrines within that county. It is probable, from he low rate at which these spiritual commissions ere generally paid, that the same person underook several of them at once. In the will of lady ecily Gerbridge, in 1418, only ten marks are left r a pilgrim to visit Rome; and in another, that Gardiner, bishop of Norwich, in 1508, only wenty marks are left for the same pilgrimage, ith the condition of singing at Rome there for irteen weeks. In some few cases, the executors of a will were directed to give certain sums to all pilgrims, without distinction, who were willing to undertake an assigned pilgrimage for the deceased. The same system of vicarious duty prevailed in the crusades; but at first the privilege of deputation was confined to persons of the same rank. A father often bequeathed a crusade to his son, and assigned him by will certain funds for his expenses; and the son, again, perhaps satisfied his conscience by transferring it to his own heirs. This delay, however, arose partly from the long intermission of crusades, in which alone such hostile service could be performed; and the duty thus often continued to be acknowledged for several generations. In the will of Sir Roger Beauchamp, in 1379, he confesses that, by the devise of his grand-father, he was bound to do service in the Holy Land, to the expense of two hundred marks; but having never performed it, he now transferred the duty, with the funds for it, to his grand-son, to discharge for him.

The practice of making valuable presents to shrines, though not assuming the form of pilgrimages, was very nearly allied to them in spirit. These presents were made annually, or at other periodical intervals, by most persons of rank in Catholic ages. It appears from the household book of the earl of Northumberland that he gave donations every year to several popular shrines, and kept a candle constantly burning at some of them, with a provision for a priest to attend it. Edward I. appears to have made periodical offerings to nearly one hundred shrines; and his queen is recorded to have given twelve florins of gold for herself and her son, to the several shrines of Becket at Canterbury, with three florins more for the infant with which her majesty was then pregnant. It was common in sickness for the invalid or his friends to tempt the intercession of a saint by vowing to present quantities of corn, bread, or wax at his shrine, the precise quantity being generally determined by the weight of the patient. In one of the Paston Letters, Margaret Paston informs her brother, that his mother had vowed an image of wax of his weight to Our Lady of Walsingham, and that she was going to the same shrine, on a pilgrimage for him. But the most valuable presents of this kind were those made by bequest. Ladies, at their death, often left their richest dresses and most costly jewels to the shrines of their favourite saint; and it was probably in this way, as much as by pilgrimage, that their immense wealth was accumulated. A most splendid bequest of this kind occurs in the will of Richard Beauchamp, earl of Warwick, in 1435. He directs his executors to cause four images of pure gold, each containing twenty pounds, to be made in the likeness of himself in his coat of arms, and holding an anchor between his hands; one to be given to the shrine of St Alban, another to St Thomas of Canterbury, a third to Bridlington, in Yorkshire, and a fourth to St Winifred, at Shrewsbury.

One reason, probably, for making gifts in this form, rather than in money, was to ensure their permanent attachment to the shrine to which they were given. To what degree this precaution was necessary is not known—or what was the precise law affecting the property of offerings. At shrines, like that of Becket, it may be supposed, from their immense wealth, that a great part of the presents were preserved; but at many of the lesser ones the priests avowedly claimed the gifts as their own. At the celebrated image of Our Lady in St Paul's, even the candles set up by devotees were not allowed to burn, but were regularly taken down and carried to a room below the Chapter-House, where they were melted down as a perquisite of the canons. The same appears to have been the case with the offerings at nearly all the shrines in London; and from the loss of this source of revenue, the value of many of the livings was sensibly diminished at the Reformation.

To this cause may also perhaps be attributed the excessive number of rural shrines. Under strong temptations of gain, there will never be wanting persons in any profession to take advantage of ignorance and credulity; and such disinterested forbearance was least of all to be expected in the clergy of the middle ages. The history of one of the absurd relics mentioned in the preceding pages, the good sword of Winfarthing, is probably a fair sample of that of a majority of the shrines, if their origin could be known. This precious relic was originally the sword of a robber, who took sanctuary in the churchyard, but escaped through the negligence of the watchman, and left this sword behind him. It was laid up for many years in an old chest; but the parson and clerk at length striking on the idea of proclaiming it as a relic, drew it from its obscurity, and made a handsome revenue of their device. "The taking up of a man's bones," says Sir Thomas More, "and setting them in a gay shrine, hath made many a saint." The image of the Virgin at Worcester, when unfrocked by the reformers, was found to be the statue of one of their bishops.

Many of the shrines were as mean in external apparatus as they were absurd in purpose. The jealousy of Alexander on the subject of his portrait, might have been adopted at them with good effect. The usual representation of God the Father resembled "an old broken-backed man, with a white head and beard, a wrinkled forehead, large hanging lips, and toothless gums." It is probable, however, that this description might apply chiefly to the smaller shrines. The richer ones were often furnished with great sumptuousness, and, like the magnificent edifices in which they were placed, were well calculated to inspire the awe and wonder of a rude and barbarous people. Many of them were of solid gold, or richly gilt and set with jewels. Tapers were continually burning before them; banners were suspended over them, and sometimes the effigies of knights, in complete armour, stood around them, as if for a guard.

There can be no doubt of the injurious effects which, in some cases, arose from pilgrimages, and especially those of the lower orders. In almost every town and neighbourhood, the loose and idle part of the population seem to have been the most persevering pilgrims. The interlocutor before quoted in Sir Thomas More's Dyalogue observes that "the most part that cometh, cometh for no devotion at all; but only for good company to babble thitherward, and drinke dronke there, and then dance and reel homeward. Many that seemeth an honest housewife at home, hathe helpe of a bawde to bring her to mischief as she walketh about upon her pilgrimages." But so far as positive evidence goes, the pilgrimages of the better classes were more severe in their character, or at least more decorous. Instances might occur of their being converted into licentiousness; but they were probably productive, on the whole, of far more good than evil. A part of the opprobrium under which they lie arose from the conduct of persons who were merely pilgrims in disguise. There were love pilgrims, trading pilgrims, pilgrim adventurers, &c., whose objects had scarcely in profession any connection with religion. Of course, the crimes or irregularities of such persons cannot with any fairness be charged upon those who assumed the profession in reality.

PLIOCENE PERIOD, in geology, constitutes the last division of the tertiary strata, or that immediately preceding the recent era. The name is derived from πλειων, greater, and [illegible], recent, as the greater proportion of the fossil shells found in these deposits are recent. Of 226 shells found in the Sicilian beds, 216 were of existing species. The Pliocene strata are divided into newer and older. The district around Naples, and a portion of the strata of Sicily, belong to the newer, the Subappennine deposits in Italy and Tuscany, to the older.

POCOCK, ISAAC, the writer of several popular dramatic pieces, was born at Bristol, 2nd March 1782. When a child he evinced a talent for drawing, and he was placed first as a pupil with Romney, after whose retirement he studied under Sir William Beechey, by which means he acquired the bold style of the former with the richness and delicacy of colouring of the latter. In [illegible] "The British Institution for the promotion of the Fine Arts" was established in Pall Mall, and as a student there he distinguished himself by some very fine copies of pictures of the ancient masters. In 1807 he entered the lists with numerous competitors for the first prize given by that Institution for the best original historical painting; he chose for his subject the Murder of Thomas à Becket, and gained the prize. After this encouragement, he painted several other historical and pastoral subjects, as well as portraits, in all of which there was so much merit, that, had necessity compelled him to devote his undivided attention to the art, and to prosecute it with industry, he would doubtless have realised the expectations formed of him by his old masters and his friends, by attaining a high rank amongst the artists of his day. But, having the prospect of an independent fortune, being young, and mixing much in society (for which his varied accomplishments, originality of humour, and agreeable manners peculiarly fitted him), he gradually relaxed in the pursuit of that profession. About this time also, at the suggestion of a friend, he tried his powers as a dramatist; and, the attempt succeeding, he made further contributions to the drama from time to time, and although celebrity was not sought by him, he eventually became known as one of the most successful dramatists of his day. In [illegible], he succeeded to the property of his uncle and aunt, Sir Isaac and lady Pocock, and took up his residence at Maidenhead, where he employed himself in the duties of a country gentleman, at times using both his pencil and his pen, and producing works which show how highly he was gifted. Some of his poetical pieces are found with the fugitive literature and music of the day. His last [illegible] painting was an altar-piece ("Our Saviour blessing little Children") presented by him to the new chapel at Maidenhead. During his residence in London, at the period of Bonaparte's threatened invasion, he was appointed first lieutenant of "The

Royal Westminster Volunteers," whence he was raised to the rank of major by the suffrage of its members; and he had not long been resident at Maidenhead before he was joined in the commission of the peace for Berkshire; and in July, 1831, appointed one of his Majesty's deputy lieutenants for that county. He was active and energetic in the performance of the duties which devolved upon him as a magistrate or otherwise; and in all the relations of private life his conduct was exemplary. He died after a few hours' illness on the 23d Aug. 1835.

His first dramatic essay was the musical farce of Yes or No? produced at the Haymarket in 1808; this was followed in 1810 by two lively, bustling pieces, viz., Hit or Miss, and Seventy Years Ago; the former rendered famous by the inimitable acting of the late Charles Mathews in the character of *Cypher*, and both first acted at the Lyceum. Added to these, his most successful productions were, Any Thing New, a musical farce, 1811; The Green Dragon, another; and Harry Le Roy, a burletta, (altered from the Miller of Mansfield,) all in 1811; The Miller and his Men, a melodrama, 1813, which, by aid of the sweet music of Bishop, still retains a place on the stage; For England Ho! an opera, 1813; John of Paris, an opera, 1814; Zembuca, a melodrama, 1814; The Magpie or the Maid? a melodrama, 1815; Robinson Crusoe, a pantomimic Easter-piece, 1817; Rob Roy, an opera (dramatised from Scott's novel,) 1818; Montrose, a musical drama, 1822; Woodstock, a drama, in five acts (from Scott's novel,) 1826; The Robber's Wife, a melodrama, 1830; The Corporal's Wedding, a farce, 1830-1; The Omnibus, an interlude, 1831, Country Quarters, a farce, 1832; The Clutterbucks, a farce, 1832; Scan-Mag, a farce, 1833; The Ferry and the Mill, a melodrama, 1833; and King Arthur and the Knights of the Round Table, a Christmas equestrian spectacle, 1834-5. We may mention, as less successful, The Farce Writer, which christens itself; The Heir of Veronia, a opera, 1817; The Libertine, ditto, 1817; The Antiquary, a play (from Scott's novel, afterwards redramatised with better success by Mr Terry,) before 1820; Husbands and Wives, a farce, 1817; Alfred the Great, or the Enchanted Standard, a musical drama (partly founded on an early production of O'Keeffe's,) 1827; Tucki Tomba, an Easter-piece, 1828; Peveril of the Peak, an opera, 1826; The Blue Anchor, a nautical drama, 1830; The Doom Kiss, a musical drama, 1832; Anster Fair, an Easter folly, 1834; and two pieces produced since his death, one a farce, called, The Night Patrol, and the other an adaptation of Sir Walter Scott's novel of Old Mortality, under the title of Cavaliers and Roundheads.

POISONING. Perhaps there is nothing, in which the progress of civilization is more distinctly marked, than in the increased tenderness which is felt for human life. This may, at first, seem a paradoxical remark in the generation immediately succeeding what may be called the *age of the guillotine* in France. But after that dreadful and convulsive crisis was passed, the amelioration over the preceding century was visible. Napoleon himself had not the power to re-enact the tragedy of Patkul; and the execution of the duke d'Enghien was as fatal to him, in public opinion, as the invasion of Spain was in political influence. His reign, all things considered, was by no means bloody. The recent changes in France, nearly as they have verged toward the character of a bloody revolution, have yet escaped it. In the works of English illustrative history, the portraits of half the eminent noblemen and statesmen, two centuries ago, contain the fatal axe, among the ornamental work of the engraving; expressive symbol of the fate of the original. But the great of the present day die in their beds, with no worse enemy to fear than gout and old age.

Nor is the frequency of assassination less diminished, than that of judicial destruction of life. The tales one reads of Neapolitan bravos, whose poignard can, at any time, be hired for a ducat, if ever true, are, we suspect, true no longer. Men are neither for themselves, nor for hire, so easily moved "to break into the bloody house of life." Life is more precious than it was. Every man has a higher consciousness of his own value, in proportion to the advance of civilization; and he measures the value of another's life by his own standard. Society better protects its members. The laws reign. As the State does not set an example of being profuse of human blood, private hatred feels the restraint of public opinion. The great feudal powers are broken down, under whom a sort of private war, fatal to security of life and property, was carried on, and both were sacrificed, without the absolute odium of robbery and murder. The abolition of religious asylums has driven out the desperado from his shelter in the church. The great facilities of communication have lent wings to that instinct with which retributive justice rushes out upon the traces of the murderer, and dogs him to the deepest retreats in the remotest countries. But these all, as it seems to us, resolve themselves into the greater tenderness with which life is regarded, and the higher value attached to its preservation.

There have been periods of the world, when every great man, king, prince, minister, or favourite, was deemed in danger of poison; when not a morsel of food was swallowed by the unhappy potentate, till it was tasted. Poisoning is now an insulated crime. No one fears it, more than he fears assassination in any other way, or highway robbery. As it requires neither strength nor nerve for its perpetration,—nothing but deadly malice,—it must, of course, retain its place among the crimes which fix their stain on humanity. In the present day, solitary cases occasionally occur,[*] but in almost every age of the world, down to the middle of the last century, the poisoner's calling was in some countries, to a certain degree a profession, not to say a department of the government.

We do not here allude to the open use of the hemlock, as a means of inflicting capital punishment, but to the employment of poison, as a secret method of destroying persons obnoxious to public or private hate. It is a beautiful anecdote, which is told of Alexander the Great, that, being seized with a fever, after crossing the Cydnus, he was warned by Parmenio, in a letter, not to taste the medicine, which his physician offered him, for fear of poison. Alexander gave the letter to Philip, (that was the physician's name) to read, and the calm and tranquil air of Philip satisfied the ailing conqueror, that he might safely drink the potion. But it was an uncertain test, and proved self-possession rather than innocence. Philip, a king of Macedonia, not the father of Alexander, understood the convenience of a secret poison. He is said by Plutarch, when he had become weary of his connection with Aratus of Sicyon, to have given him, "not a sharp and violent poison, but one of those which induce first a slow fever and a dull cough, and so by degrees bring on a consumption." Aratus knew with whom he was dealing, and having, a short time before his death, raised blood, said, "such are the rewards of royal friendship." The Persians greatly excelled in the art of poisoning. Plutarch and Ctesias relate, that queen Parysatis, the mother of Cyrus the younger, put to death her daughter-in-law Statira, by means of a knife poisoned on one side of the blade. A bird was set before the two queens, at supper; it was divided by the poisoned knife; Parysatis ate her half with impunity; Statira died. Eminent men, in the convulsive struggles of the ancient republics, frequently carried a little poison about them, that they might, if necessary, by suicide, escape a painful and ignominious death. Demosthenes carried his in the hollow of his stylus, and Hannibal's was concealed in a ring.

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[*] In 1838, a married woman was executed at Glasgow, for poisoning. She let lodgings to wayfarers and working people at Carluke, a small town in the upper ward of Lanarkshire; and having been intrusted with a sum of money (five or six pounds) by a highland out-door labourer, till the fall of the year, when he should return to his home in the far-off Hebrides, she was convicted of administering arsenic to him in his porridge, in order to silence his claim upon her for his hard earned savings. She was also convicted of having previously administered arsenic to a poor old bed-ridden woman, who occupied an apartment in her house, for no other good reason that could be assigned, than in order to make room for a daughter who was on the eve of getting married. The evidence against her, it may be remarked, was very strong, but not in all its points completely satisfactory, and it was rendered more doubtful by the fact of her persisting in her innocence to the last.

It is not easy to ascertain what the preparation was, which was employed by the ancients, and produced sudden death, by the exhibition of small quantities; for although there is probably much exaggeration on subjects of this kind, yet it is impossible to doubt, that some such noxious preparations were known to the ancient world. Theophrastus says, that the poison of most subtle operation was extracted from Wolfsbane (Aconitum); that it could be so prepared, as to operate in two or three months, or at the end of a year or two years. No antidote had been discovered to this poison, and it was a capital crime to have the plant, from which it was extracted, in one's possession. If we are to understand by this, that a dose could be administered, which would take effect, at a calculated and distant period, it is probably fabulous. If it be meant only, that by feeding a man with weak wolfsbane tea for months and years, his health might be gradually destroyed, it is credible. In that sense, Dr Johnson even admitted the genuine leaf of China itself to be "a slow poison."

Livy tells us, that poisoning never became a matter of judicial inquiry in Rome, till near two hundred years before the Christian æra. About this time, several persons of distinction went off with the same disorder, at about the same time. The fear of pestilence disturbed the city. Quintus Fabius Maximus was then the Curule Ædile, and a female slave came to him and promised, on condition of her own pardon, to disclose the names of those who were guilty. Quintus Fabius Maximus never proceeded rashly; and though even he might have been forgiven a little hurry, in despatching matters with a confessed poisoner, yet he laid the case in due form before the consuls, and they before the senate. The stipulated pardon was granted, and guided by the maid the officers of justice discovered the poisoners,—ladies of the noblest families of Rome, busy around the caldron "coquentes *quædam medicamenta, alias recondita venena.*" Twenty were seized; two of them, (one was a Cornelia, the other a patrician,) undertook to speak for the rest, and declared that the drugs were medicinal. *Drink them then, yourselves,* was the stern reply. They desired permission to consult their sisterhood on that point, and all (hags, if you please, but Roman hags) agreed to the test. They all drank and died. A hundred and seventy more of the noblest ladies of Rome were seized, on similar information, and condemned. Before that day, exclaims the perturbed Livy, "there was never an inquest of poisoning. The thing was accounted a prodigy, the act not so much of depraved as of crazed minds." Following the memorable example of what was done in former great calamities, it was resolved by the senate, to have a nail driven into the temple of Jupiter. A dictator is appointed for that mystic duty,—a master of the horse named, a nail driven into the temple of Jupiter, and a stop put to poisoning for two or three centuries. Did the Roman ladies, the Cornelias and the Sergias, poison their husbands by the hundred,—did the Salem witches torment the 'afflicted'? Human nature is the same in all ages. Happy the people that, when a calamitous delusion arises, can hit the nail, that will stop it, on the head!

After the overthrow of the commonwealth, the old republican talismans lost their charm. The driving of nails lost its efficacy. Poisoning grew common, proverbial, poetical. Canidia was a poisoner, and nothing before or since Shakspeare is comparable to the pharmacy of the weird sisters in Macbeth, but that of Canidia, Sagana and Veia, in the fifth Epode of Horace.

> Canidia, brevibus implicata viperis
> Crines et incomptum caput,
> Jubet sepulchris caprificos erutas,
> Jubet cupressos funebres,
> Et uncta turpis ova ranæ sanguine
> Plumamque nocturnæ strigis,
> Herbasque, quas Iolcos atque Iberia
> Mittit, venenorum ferax,
> Et ossa ab ore rapta jejunæ canis
> Flammis aduri Colchicis.
>
> "Her head with knotted vipers hung,
> 'Twas thus the haggard sorceress sung:—
> 'First the wild fig there must bring,
> Which through rifted grave did spring;
> Eggs and plume of midnight owl
> In filthy frog-blood smeared and foul,
> Herbs of Iolcos and of Spain,
> Teeming soil for deadly bane,
> Wrested bone from famished hound
> In Colchian witch-fires burnt and ground."

But the times were coming, when Canidia was to whiten into a sister of charity. Poor Canidia's crimes were the offspring of love and jealousy; but Agrippina's—what shall we say of hers? What can we say more fitly, than that they were worthy of the mother of Nero, who after murdering her husband, and him her uncle, to place her son on the throne, was by that son herself murdered, exclaiming, as she died, to her unnatural offspring, "Strike that bosom, which could give life to such a monster?" Having determined to destroy Claudius, she took counsel of Locusta, a creature lately convicted of poisoning, and "long kept among the engines of government!" By this skilful agent a poison was prepared, which should do its work gently, to avoid the dangerous *éclat* of a sudden catastrophe; a wasting and torpid poison, lest Claudius, returning to his senses in the agonies of a sudden death, should forgive his son, an opposite poison, which should shake the reason, with-ut bringing on a speedy dissolution. Claudius nding unexpected relief from some medical appliations, Agrippina was terrified; but the court hysician, Xenophon by name,—*Græculus esuriens*,—assisted the agonizing monarch to a bolus of harper efficacy, and soon sent him on that *anaaris*, from which there is no return. Locusta deerved well of Nero. and was entitled to the coninued patronage of the imperial family. Nero ras unwilling that the engines of the government hould rust by disuse. As Claudius had been renoved for fear he should raise Brittanicus, his son, o the throne, it occurred to Nero that the work rould be more effectually performed if himself rere put out of the way. Locusta was again conulted, and prepared a grace-cup for the doomed rince. Locusta was tender of her character; like ord Bacon, she was a friend of moderate counsels, nd she gave the son of Claudius, as she had given is father, a slow and wasting draught. Nero alled the considerate sorceress into his imperial resence, taunted her with having the fear of the *ex Julia* before her eyes, and enjoined a more igorous practice; and by way of impressing his dvice, beat her with his own august fists, and orered her to prepare a more active poison in his ight. It was given to a kid;—the animal lanuished five hours. New threats and blows. The oison is boiled down to twice its former thickness, nd being tried upon a pig produced instant death. hat, indeed, was drink for none but kings; it was erved to Brittanicus by order of Nero, in his own resence and with instant effect. Locusta was ardoned the crimes of which she stood convicted, ichly endowed with lands and gold, and entrusted vith disciples, whom she might train up, to beome engines of the government, as useful as herelf. Dr Guillotin, who invented the machine, rhich so agreeably perpetuates his name, is said to ave made personal trial of its efficacy. Phalaris, rhen the brazen bull was brought him, complinented its contriver with a roast in it, as the peron best entitled to make the first experiment of s admirable construction. Locusta appeared to hink, that as Nero had directed her kind offices to thers, he was entitled to them himself; but she iled in the attempt; an attempt, it need not be aid, which no one fails in twice. But she will ive immortal in Tacitus and Juvenal, as long as esh knows how to creep, or blood to curdle.

Aulus Gellius has preserved a tradition, touchng the fortitude and magnanimity of Regulus, as e found it in an ancient author now lost. The stanard writers do not confirm it; but it ought to be rue, for it is incontestably the most striking illusation of Punic faith, which history has preserved. he common version of the history runs, that the arthaginians, placing full reliance on the honour f Regulus, whom they had made captive, sent im to Rome, to propose an exchange of prisoners, n the condition, that, if the Romans did not connt, he would return to his captivity, in Carthage. icero thought he gave Regulus credit for sufficient agnanimity, in making him counsel the senate not consent to exchange him, aged and worn out as e was, for the young African chieftains, who were apable of living to make battle for years. The nate takes the advice of the poor old consul, and nds him back to Carthage to be tortured. But uditanus, the lost author cited by Aulus Gellius, cribes to the Carthaginians a villany of most exuisite texture. They administered to the Roman veteran a secret poison, calculated to take effect in a few months; so that if the Romans agreed to the exchange, they would get nothing but a poisoned old consul, in return for a half score of fervid young Africans. This was pretty well; but unluckily for the fraud, Regulus detected it; he was determined to nip the treason in the bud, and dropping a hint of it to the senate, put them on their guard against being taken in.

The curious reader may again ask, of what these poisons were compounded. Unfortunately for the inquiry, the school of Locusta perished with her, and we have none but vague surmises and downright fables. Juvenal intimates that a red-breasted toad,—a fourlegged ruddock,—yielded a very suitable essence, to be administered by a noble Roman dame to her thirsty lord:

> "molle Callenum
> Porrectura, viro miscet sitiente rubetam."

But the venom of the toad is as fabulous as his jewel. Ugly he is, but an innocent, timid, useful reptile, who has earned a bad name, from an unsightly figure.

The sea-hare, *lepus marinus*, was a favourite dish with the ancient poisoner. It is the *aplysia depilans* of Linnæus. Philostratus pronounces its venom more deleterious than that of any other animal in the sea or on land. Nero frequently served it up to his guests, and Domitian treated Titus to the same dainty fare. With the more virulent mineral poisons of the modern pharmacopeia, the ancients were not acquainted; and the best praise we can give the Roman or the Grecian venefica is, that she did her best with the means which the state of the arts afforded her.

But at length every thing like regular practice broke down. The empire became degenerate; repeated invasions of barbarians, bringing their own uncouth Scythian venoms with them, destroyed every thing like classical poisoning. It was no longer taught in regular institutions, like that of the discreet Locusta; nor were its professors set apart, among the engines of government, as under the venerable Claudius and the amiable Nero. In the ages of barbarism, the dark, dreary, and illiterate ages of the empire of the East, and the empire of the West, there was an unrecorded, promiscuous, vulgar practice of all the arts of assassination; an unlicensed and empiric use of the bowl and the dagger, which really affords nothing on which a scientific curiosity can repose with pleasure.

But Leo's golden days arrive. With the other sister arts, that of poisoning started into life, and not only, like eloquence, "shook the poppies from her brow," but began to concoct them into a quieting draught for her neighbour's lip. Pope Alexander VI. and his son Cæsar Borgia, invited nine newly created cardinals to dinner, with a view of despatching them by poisoned wine. By the error, or possibly the design, of the attendants, the wine was served to the pope and his son. The latter by superior strength of constitution escaped; Alexander died. Pope Sistus V. is supposed to have been poisoned. He was a contemporary with Philip II. of Spain, who was wont to call the poison, of which he commonly made use, his *requiescat in pace*. Sistus used to say to Philip's ambassador at Rome, "know Mr Ambassador, that we fear nothing from your master, but one of his *requiescats in pace*." He had reason to fear them, for he died their victim.

But the mistress of this art, did not make her appearance at once. It was in the latter part of the seventeenth century, and the commencement of the eighteenth, that Toffana flourished. This lady lived first at Palermo; but a professor so skilful of an art so useful, could not long be confined to a provincial sphere. About the close of the seventeenth century she removed to Naples. She contrived a delicate preparation of arsenic, dissolved in a decoction of *Antirrhinum Cymbalaria*, of which from four to six drops were supposed to be enough to destroy a man. It entered freely into commerce, and was known by the name of *aqua della Toffana*, more exquisitely *acquetta de Napoli*, and even *acquetta*. In common cases, of course, Toffana was paid for her panacæa; but she had a heart open as day, to melting charity, and ladies, who wished to cultivate the mortifying graces of widowhood, were supplied gratis. But though an admiring and grateful public bestowed on her invention the name mentioned, thus securing to her the credit, to which she was so justly entitled, she herself was more modest, and waived that honour. The sarcophagus of St Nicholas at Bari distils a certain oil, endowed with marvellous virtues to heal diseases, and sold all over Italy under the name of Manna of *St Nicholas of Bari*. Toffana, considering that if her little arsenical syrup did not actually cure diseases, it put the patient out of misery, which might be regarded as the next best thing, prepared it in small phials, stamped with the image of good St Nicholas of Bari, and labelled, as his manna. Father Labat, in his travels in Italy, mentioning this fact, observes, that it was attended with the great advantage, that as the manna of St Nicholas was a well known, and withal a sacred article, Toffana's counterfeit, under that name, passed the custom-house with little scrutiny: a pleasing illustration of the demand for this delicate chemical preparation, in the kingdom of Naples. One of these bottles, according to Dr Marx, is said to be still in existence at Cologne.

But poisoning, though in great repute, was not positively lawful in the kingdom of Naples; and the government at last began to bestir itself. Disquieted by this circumstance, Toffana took refuge in an ecclesiastical asylum, where, under the privileges of the place, she bade defiance, for some time, to the officers of justice, and continued to vend her catholicon from the very bosom of the church. But the scandal became at length too great to be borne. She was dragged from her refuge and thrown into prison. A great outcry was raised by the clergy at this violation of their privileges, and the people, unwilling to be defrauded of their right to be poisoned, joined in the clamour of the priests. It was only by circulating a report, that she had poisoned the wells in the city, that the current of public sentiment could be turned against her. Being put to the rack, she confessed her enormities; named those who had afforded her protection, who were immediately dragged from churches and monasteries; and stated that the day before her last flight from justice, she had sent two boxes of her manna to Rome. It was found in the custom-house in that city, but it did not appear that it was sent to order. It was a little speculation of Toffana's, on her own account. The archbishop still murmured at her being torn from a privileged asylum; and, accordingly, to cut the matter short, she was strangled and thrown into the court-yard of the convent, from which she had been taken. But her art did not perish with her; and, according to Keysler, who travelled in the former part of the eighteenth century, and saw Toffana in confinement, her *acquetta* continued to be prepared, in great quantities, after her execution.

We have somewhat anticipated the order of events in relating the history of Toffana. A hundred and fifty years before that lady flourished, the art was introduced into England. But lord Bacon, who performed the duties of attorney-general, in the case of Sir Thomas Overbury, maintains, that poisoning is not a crime to which the English people are predisposed, "non est nostri generis nec *sanguinis*." He justly sets forth the enormity of an offence, whereby a man is taken off, in his peace, and thinking no harm, and while he is comforting and refreshing nature with his food. It is a crime the more to be dreaded, because it is so easily committed, and so hard to be prevented or discovered. Other murders are committed in *sonitu*; with acts, that may discover or tame the offenders; but this comes upon a man when he is careless and without suspicion, and every day he is in the gates of death. Nor does it only concern the man, against whom the malice was intended, but it was often prepared for one, and taken by another, as in the example of 22 Henry VIII., where the purpose was to poison one man, and being put into the broth, sixteen of the bishop of Rochester's servants were affected.

This extraordinary instance of the crime of poisoning produced such an effect upon the legislature of Great Britain, that the following act was law passed, making murder by poisoning high treason, and inflicting upon it the singular punishment of *boiling to death*. We have thought it worth while to copy the preamble of this act, as [illegible] throwing some light on the manners of the age, and particularly illustrating the opinions entertained by our worthy ancestors of the age of Henry VIII. on the subject of *ex post facto* laws.

22 Henry VIII. c. 9. "The kynges royal majistie callyng to hys moste blessed remembraunce that the makyng of good and holsome lawes and the execution of the same agaynste the offenders thereof is the only cause that good obedyence and order hath ben preserved in this realme, and his Highnes havyng moste tender zeale to the same, emonge other thynges consyderyng that mannes lyfe above all thynges is chyefly to be favoured, and voluntary murders moste highly to be detested and abhorred, and specyally of all kyndes of murders poysonynge, which in this realme hytherto our Lorde be thanked hath ben moste rare and seldome commytted or practysed; and now in the tyme of this presente parliamente, that is to saye, in the [illegible] daye of Februarye in the xxijd yere of his moste victorious reygn, one Richarde Roose, late of Rochester in the countie of Kente, Coke, otherwyse called Richard Coke, of his most wycked and dampnable dysposicyon dyd caste a certayne venyme or poyson into a vessel replenyshed with yeste or barme standyng in the kechyn of the reverende Father in God John Bysshopp of Rochester at his place in Lamehyth Marshe wythe which yeste or Barme and other thynges convenyent, porage or gruell was forthwyth made for his famylie there beyng wherby not only the nombre of xvij persons of his said famylie which dyd eate of that porage were mortally enfeebled and poysoned and one of them, that is to say, Bennett Curwen gentylman thereof ys deceassed, but also certayne pore people which resorted to the sayde bysshops place and

were there charaytably fedde wyth the remayne of the sayde porrage and other vytayles, were in lyke wise infected, and one pore woman of them that is to saye Alyce Tryppytt wydow is also therof nowe deceassed: our sayde sovereign lorde the kynge of hys blessed disposicion inwardly abhorryihg all such abhomynable offences, because that in manner no person can lyve in suertye out of daunger of death by that meane, yf practyse thereof should not be exchued, hath ordeyned and enacted by auctorytie of thys presente parlyament that the sayd poysonyng be adjudged and demed as high treason. And that the sayde Richarde for the sayde murder and poysonynge of the sayde two persones as is aforesayde by auctoritye of thys presente parlyament, shall stande and be attaynted of highe treason: and by cause that detestable offence nowe newly practysed and comytted requyreth condigne punysshmente for the same; It is ordayned and enacted by auctoritie of this presente parliamente that the said Richarde Roose shall be therfore boyled to deathe without havynge any advauntage of his clargie."

Under this statute, as we learn from lord Coke, in his third institute, Margaret Davy, a young woman, was attainted of high treason, for poisoning her mistress, and some others were boiled to death in Smithfield, the 17th of March, the same year. But this act, continues his lordship, was too severe to live long, and was therefore repealed by 1 E. 6. cap. 12, and 1 Mar. cap. 1. It is not impossible that the proverbial expressions, to keep out of hot water, and to get into hot water, may have had their origin in the cruel punishment attached to this crime, by the law of 22 Henry 8.

It would seem that, by the ancient law of England, poisoning was still more severely dealt with. "Poyson," says lord Coke, (*venenum, a venis quia a venis permeat.*)* "is, as hath been said, the most detestable of all, because it is most horrible and fearful to the nature of man, and of all others can be least prevented, either by manhood or providence; and that made Fleta to say, Item nec per patriam se defendere debet quis de veneno dato, sed tantum per corpus suum, eo quod initium facti non fuit tam publicum quod sciri poterit a patria, &c., but that is not holden for law at this day." As well it might not be. Suppose the person accused were innocent.

The case of John Roose illustrates the insular wkwardness of John Bull, compared with the lexterity and taste of his continental neighbours. The exquisite Toffana distils her delicate *acquetta*, nd four or five drops are sufficient to do the work. ohn empties a pound of arsenic into his master's oup-kettle, and poisons half the parish. But the rts improve by time and practice, and under the eign of Elizabeth, that of secret poisoning was ntroduced from Italy, and flourished under the uspices of no less a personage, than the great Earl f Leicester, the most magnificent subject that ever lorned the British court. Among the persons atched to his household, was an Italian secretary, hom he had brought home from his travels, and ho was the reputed instrument with which he moved his victims. There is no great reason to ubt, that many of the tales which circulated out the secret practices of this arrogant favourite, were the product of envy and political hostility. They were so generally believed, however, that persons dying of a sudden death, were said to have gone off by *Leicester's cold;* and Camden, who wrote his work, under the auspices of the lord treasurer Burleigh, gives no doubtful countenance to some of the most atrocious of the insinuations against Leicester. Among his earliest victims was his wife, the gentle Amy Robsart, immortalized by Sir Walter. He married this lady on the 4th of June, 1560; his sovereign, king Edward, was present at the nuptials; and from a passage in his journal, we obtain a knowledge of the somewhat singular bridal festivities of that day. "June 4, 1560, Sir Robert Dudley, third son of the Earl of Warwick, married Sir John Robsart's daughter; after which marriage there were certain gentlemen, that did strive, who should first take away a goose's head, which was hanged alive on two cross posts." After living with him ten years, this poor lady disappeared, "at a very unlucky juncture for the earl's reputation; because the world at this time conceived it might be much for his conveniency, to be without a wife, this island then holding two queens, young and without husbands." She was prevailed upon to visit Cumnor-house, the seat of Antony Foster, one of Leicester's creatures. There the unfortunate lady became ill, —the consequence of the infernal practices upon her,—which however produced their effect too slowly to answer the desired end. She was importuned by Foster and his tool Varney, to take medicine for her disorder. "They, seeing her sad and heavy, as one that well knew by her other handling, that her death was not far off, began to persuade her, that her present disease was melancholy, and other humours, and would needs counsel her to take some potion. This she absolutely refusing to do (as suspecting the worst), they sent a messenger for Dr Bayly, professor of physic, at Oxford, university, and intreated him to persuade her to take some little potion, by his direction. They would fetch the same at Oxford, *meaning to have added something of their own for her comfort*, as the doctor upon just cause and consideration did suspect, seeing their great importunity, and the small need the lady had of physic, and therefore he peremptorily denied their request." As well he might, for a part of this ingeniously contrived plan, was to mix a deadly poison with the medicine, which the doctor might prescribe, and thus throw upon him the responsibility of her death. Her wariness baffled the attempts at poison, and she perished by arts still more atrocious. The superb and remorseless hypocrite who caused her death, bestowed upon her the honours of a splendid funeral; but his own chaplain, in pronouncing her eulogium, stammering under the load of the dark and universal suspicion of foul play, twice in the course of his address, invoked the sympathy of the audience for the fate of the poor lady "so sadly *murdered*."

The next experiment of Leicester was upon lord Sheffield, who suddenly died, and, as it was charitably rumoured, of a *Leicester cold*. Leicester shortly after espoused the widow, and under the pretence that the queen would be offended at the marriage, compelled her to keep it secret. After some time, the more effectually to conceal the connection, he required her to marry Sir Edward Stafford. This she refused, till under the gentle discipline of Leicester, her hair fell off, and her nails dropped out, and she did what was demanded of her, to save her life. These facts are certified by her own testimony on oath, and atrocious as they are, incredible as they seem, they are related by Sir William Dugdale, and do not appear to be discredited by Camden.

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* Lord Coke's Etymology is obscure and doubtful. *Venenum* which the first half only is radical, as in Venefica) is, we ke it, from an ancient root, with which the English *bane*, the xon *bana*, and the Greek *αἰνός*, (dreadful, deadly), are prodly connected. The latter word, with the digamma, would re the basis of *venenum*.

The earl of Essex went off in the same way, and for the same cause; but his countess happily survived this western Blue Beard. Besides his two first wives, and the husbands of his two last, there were others who were publicly said "to have travelled the same road, by the same conveyance." The cardinal Chatillon ambassador from France, was poisoned at Canterbury, on his way homeward, and as was believed, by Leicester, out of revenge for the freedom with which the cardinal had expostulated with queen Elizabeth, on the arts with which Leicester defeated her marriage with a foreign prince. Sir Nicholas Throgmorton was seized with a mortal complaint at the earl of Leicester's table, and died before he could be removed. Thus much appears by a letter of Leicester himself to Walsingham. That he perished in consequence of poison given him in the salad, rests upon a tradition in the family, purporting to be founded on the dying asseveration of Sir Nicholas. The earl of Sussex, his great rival, was one of his reputed victims. On his death-bed, he gave this warning to his friends; "I am passing into another world, and must now leave you to your fortunes, and to the queen's grace and goodness; but beware of the gipsy, (Leicester,) for he will be too hard for you all. You know not the beast as well as I do." These dark imputations and many others of like import may be believed, when we reflect that Camden states positively, that Leicester proposed in council, that Mary, queen of Scots, should be removed by poison. The biographer, who records all these facts, adds with commendable simplicity, that "they must be exaggerated at least, if not false, since the earl at this juncture, (that of lord Sheffield's death,) obtained an act of parliament to enable him to erect a hospital at Warwick, which he afterwards did, and plentifully endowed it, that it might bear his name, and preserve his memory, as a most religious person,—the character which, of all others, he most affected,—to succeeding times!" Well done, candour!

We have not space to enter into the atrocious details of Sir Thomas Overbury's tragic fate; the only case, according to lord Bacon, except that of the young princes, of a murder in the tower; and, according to lord Coke, the only instance, in which "any of the nobility of this realm have been attainted for the poisoning of any." The value of this part of the compliment may be estimated, after what we have just related of the earl of Leicester. The indictment against Richard Weston, the keeper of Sir Thomas, set forth, that, on the ninth of May, 1613, he administered to Sir Thomas a poison called roseacre, in his broth, and on the first of June, *ut præfatum Thomam Overbury magis celeriter interficeret et murdraret*, gave him another poison called white arsenic. Further, that, on the 10th of July, the said Richard Weston gave to the said Sir Thomas, a poyson called mercury sublimat, in some tarts; and that another person, by the procurement of Richard Weston, administered the said mercury sublimat to Sir Thomas Overbury; of which several poisons he died. This was unanimously adjudged to be a good indictment, although it did not appear of which of the poisons Sir Thomas died. But the substance of the indictment was, whether he was poisoned by Weston. Weston was tried and convicted, as were also Sir Gervas Helwys, lieutenant of the tower, Richard Franklin, a physician, Anne Turner, and the earl and countess of Somerset, all of whom were executed, except the two last, who were shamefully pardoned by James I. It appeared on the trial, that in addition to the poisons mentioned in the indictment, Franklin prepared several others, as the powder of diamonds, the powder of spiders, lapis causticus, and cantharides.*

Among the actors in this tragedy, who were brought to light and to justice, was Mrs Anne Turner, a female who would have done no discredit to the academy of Locusta. Her trial was accompanied with incidents of a peculiar nature. It disclosed that, both on her part and that of her infamous patroness, the countess of Somerset, there was a terrific mixture of superstition, sorcery, lust, jealousy, and revenge. Sir Laurence Hyde, after descanting awhile on the wickedness and heinousness of poisoning, stated that "there was one Dr Forman, who lived at Lambeth, to whom the countess of Essex, (afterwards of Somerset,) and Mrs Turner used to resort, calling him father. The cause of their coming to him was, that by force of magic, he should procure the now earl of Somerset, then viscount Rochester, to love the countess, and Sir Arthur Manwaring to love Mrs Turner. In the course of his professional dealings as a necromancer, with these modern Canidias, Dr Forman acquired such a knowledge of their fiendish characters, that, before his death, he used to desire, that when he died, he might be buried very deep, "or else," said he, "I shall fear you all." He had good reason, at any rate, to fear them while he lived, for they probably had him poisoned. During the trial, some of his magical apparatus, images, pictures, and enchanted papers, were produced in court. At this moment, "there was heard a crack from the scaffolds, which caused great fear, tumult, and confusion among the spectators, and throughout the hall, every one fearing hurt, as if the devil had been present, and grown angry to have his workmanship showed, by such as were not his scholars. When the panic had a little subsided, more of "the cunning tricks" were exposed. There was, also, a note showed in court, made by Dr Forman, and written on parchment, signifying what ladies loved what lords in court. But the lord chief justice would not suffer it to be read in open court." "The good natured world," adds the fair and accomplished writer from whom we borrow the anecdote,† "believed, that he (lord Coke) found the name of his own wife on the first page."

Mrs Turner was the widow of a physician, and the poisons administered to Overbury were procured of Franklin and mixed by her. The first poison was of a green and yellow colour, which Coke calls roseacre, other writers, rosalgar, possibly realgar or orpiment, (the sulphurets of arsenic;) the second was white arsenic, and so on through seven different kinds of poison. Mrs Turner requested Franklin that they might be delicate poisons, "that would not kill a man presently, but lie in his body a certain time, whereby he might languish by little and little," and she gave him four angels, with which he bought aqua fortis, and tried it upon a cat, which languished and died pitifully two days and then died. For this reason she deemed *aqua fortis* too strong, and upon his saying arsenic was too violent also, she proposed powder of diamonds, and gave him money to buy some."

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* Institutes, iii.

† Miss Aikin's reign of James I.

Mrs Turner was found guilty and sentenced to be hung. "Many women of fashion," says Miss Aikin, "as well as men, went in their coaches to Tyburn, to witness the death of this woman, who edified the spectators, it is said, with a very penitent end." But one would not sure be ugly though one's hung, and Mrs Turner "could not deny her vanity the slight gratification of making this, her last appearance, in a ruff stiffened with yellow starch,—a favourite fashion, imported by herself from France, but to which this exhibition of it proved immediately fatal."*

But it is more than time that we should direct our steps toward France, in this rapid and desultory excursion. On the 30th of June 1670, Henrietta Anne of England, duchess of Orleans, sister of king Charles II., grand-daughter of Henry IV., died at Paris. On the previous day, after drinking a glass of cold water, in her apartment at St Cloud, she was seized with a shivering, succeeded by a burning heat, which threw her into the most excruciating torments. She cried out, that she was poisoned. The physicians were sent for. When they saw her, they were struck with horror at her livid appearance, pronounced her beyond medical aid, and advised her to receive the last sacraments of the church without delay. The princess heard them pronounce her fate with firmness; and recollecting the manner in which Bossuet had attended her mother, the queen dowager of England, she desired that not an instant should be lost in sending for him. Three couriers were successively despatched to him, and he arrived between eleven and twelve o'clock at night, at St Cloud.

In the interval, the princess suffered the most dreadful pains, and her immediate dissolution being apprehended, she made a general confession of her sins to the Abbé Feuillet, a person generally steemed, but of a harsh character. When her onfession was finished, her attendants were called a. The whole scene was afflicting and horrible. The account which her confessor gives of his own onduct, makes us, perhaps unreasonably, blame iis merciless austerity. Her lamentable shrieks, e treated as acts of rebellion against the divine will, and told her that her sins were not punished as they deserved. In the midst of her convulsions, she received his reproofs with mildness, but often inquired of Madame de la Fayette, who was at her bed-side, if Bossuet were not yet come. Before he came, she received the extreme unction from the Abbé Feuillet. Having exclaimed, in an agony of pain, "Will these torments never end?" "Do not forget yourself in this manner," said the merciless Abbé, "you ought to be better disposed for suffering; but I must tell you that your torments *will* soon end."

At length Bossuet arrived. As soon as the princess saw him, she made him promise not to quit her, till she breathed her last. He knelt down dissolved in tears, leaning on her bed, holding a crucifix in his hand. With a tremulous voice, interrupted by his own feelings, he invited her to join him, as far as her sufferings allowed, in the reflections, prayers, and acts of contrition, of faith, hope and charity, which he should address to God for her, and in her name. He was exceedingly moved, and every person present sympathized in the scene. Nothing could exceed the tender and affecting sentiments of devotion and piety, which Bossuet suggested to her. He finally subdued by them, in a great measure, her sense of the cruel sufferings which she endured. The princess heard him with mild and composed constancy. If he stopped for a moment, she gently entreated him to continue, assuring him that his words were of inestimable value to her. He then read over to her the recommendation of the soul in the liturgy, explained it to her; made her gently repeat with him its soothing prayers, softly instilled into her the sentiments, which they are intended to convey; filled her soul with faith, with compunction, with calm, with resignation; and above all, with divine love for him, into whose hands she was so soon to yield her soul. She herself, at last, felt a consciousness of her serene triumph over pain. "O, my God," she exclaimed, "why did I not always adhere to thee!" She recollected that the crucifix which Bossuet had in his hands, was the same which he had given to her mother, the queen dowager of England, to hold in her agony. She took it from him, and kept it in her hands till she breathed her last.

An hour before she died, she turned to Madame de la Fayette, and in the English language, which Bossuet did not understand, desired her to observe, that "full of gratitude for the spiritual assistance, which she had received from Bossuet, she requested that, after her decease, a particular emerald ring, set in diamonds of great price, might be presented to him." Her torments continued to the last, but her patience remained. She persisted in listening to the exhortations, repeating the prayers, and making the humble and fervent offering of herself to the divine will, which Bossuet suggested to her. Those who heard them, never forgot them. The Abbé Feuillet himself declared, that he had never heard any thing so admirable.

At three in the morning the princess died. The particulars of her death were immediately related by Madame de la Fayette, to Louis XIV. He sent for Bossuet, heard them again from him, and then, with his own hand, put the emerald ring, mentioned by the princess, on the prelate's finger, and desired him to wear it for the rest of his life, in remembrance of her. He added, that he could not better show his regard for the memory of his sister-in-law, than by desiring Bossuet to pronounce her funeral oration.

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* Mrs Turner's personal appearance seems to have been the rverse of what might have been expected. She was a delite beauty. In a curious poetical essay, entitled Sir Thomas verbury's ghost, in the third volume of the Harleian Miscelny, she is thus described :—

"It seemed, that she had been some gentle dame,
r, on each part of her fair body's frame,
ture such delicacy did bestow,
at fairer object oft it doth not show.
er crystal eye, beneath an ivory brow,
d show what she at first had been, but now
e roses on her lovely cheeks were dead.
e earth's pale colour had all overspread
r sometime lively look, and cruel death,
ming untimely with his wintry breath,
sted the fruit, which, cherry-like in show,
on her dainty lips did whilom grow.
how the cruel cord did misbecome
r comely neck! and yet by law's just doom
l been her death; those locks, like golden thread,
it used in youth to enshrine her globe-like head,
ng careless down, and that delightful limb,
r snow-white nimble hand, that used to trim
se tresses up, now spitefully did tear
l rend the same, nor did she now forbear
beat that breast of more than lily white,
ich sometime was the lodge of sweet delight.
m those two springs, where joy did whilom dwell,
f's pearly drops upon her pale cheeks fell."

The princess, as we have seen, believed herself poisoned. The court and city had the same belief. The English ambassador,—all Europe was persuaded of it. One of her household named to Voltaire the person who administered the poison; and stated that it was diamond dust, strewed on strawberries with sugar. In Paris it was generally believed at the time, that she died in consequence of drinking a glass of water, poisoned with succory. But Voltaire thinks she died a natural death, and that the malice of mankind and the love of the marvellous alone, suggested the idea of poison. The powder of diamonds, he says, is no more poisonous than the powder of coral; no impalpable powder is mechanically poisonous. He might have added that diamond powder enough to have taken the place of sugar, on a plate of strawberries, was not a poison very easily to be obtained. As to the glass of water, Madame de la Fayette and another lady drank of it, without inconvenience. The princess had, for a long time, suffered by a diseased liver;—and this, in the opinion of Voltaire, was the cause of her death. Great weight is due to his opinion, and his arguments are not without force. On the other hand, are her own convictions, and that of her family and the public at the time; her sudden death, too sudden it would seem to be occasioned by an hepatic disease; and finally the express declaration of Louis XIV., who is asserted, on pretty credible authority, to have declared his knowledge of the fact.

The belief that she was poisoned, arising in the manner related above, was strengthened by the known existence of violent feuds in the court, connected with secret negotiations, and derived additional currency from a most extraordinary series of incidents that occurred at this time. It was precisely at this period, that the crime of poisoning, unknown to any extent in the civil wars of France, fruitful as they were in almost every other species of atrocity, made its appearance at Paris. Voltaire justly mentions it as an extraordinary fact, that as this base and terrific crime made its appearance in Rome in the most flourishing period of the republic, so it broke out in France in the proudest and most prosperous days of the monarchy.

Mary Margaret d'Aubray, daughter of the magistrate Dreux d'Aubray, was, in the year 1651, married to the marquis de Brinvilliers, son of Gobelin, president of the chamber of accounts. Brinvilliers had a fortune of thirty thousand livres a year, and his wife brought him two hundred thousand as a dowry. He was quarter-master of the regiment of Normandy, and in the course of his military services became acquainted with Godin de Sainte Croix, a young man of distinguished family, a captain of cavalry in the regiment of Trassy. This young officer, then a needy adventurer, ingratiated himself into the good opinion of the marquis de Brinvilliers, became a constant visiter at his house, and finally domesticated in his family. Not long after this took place the marquis died, without suspicion of foul play, but not till his large property had almost vanished under the extravagance and dissipation of his wife.

After his death, a discreditable intimacy between his widow and the young Sainte Croix arose; and her father, to arrest and punish the scandal, obtained a *lettre de cachet* for the commitment of Sainte Croix to the Bastile. It so happened, that at this time, two Italians, one of whom was named *Exili*, were confined in the Bastile as prisoners. They had commenced business in Paris, in conjunction with Glaser, a German apothecary, in search of the philosopher's stone. Failing in this they took to vending secret poisons, by way of repairing by crime, what they had lost by folly. The confessional betrayed their guilty secret, and the two Italians were thrown into the Bastile. One of them died. The other, Exili, though not convicted, was retained in prison, and found the means from the interior of the Bastile, of carrying on his nefarious practices.

Precisely at this period, Sainte Croix was committed to prison, and confined in the same apartment with *Exili*. Actuated by the most vicious and lawless passions, the wicked arts of Exili furnished him prompt means of revenge and gratification. At the close of a year's imprisonment, they were both released, but Sainte Croix kept Exili with him, till he had made himself master of the art. As soon as he had acquired it himself he taught it to the marchioness de Brinvilliers, who assumed the character of one of the sisters of charity, distributed food to the poor and nursed the sick in the hospitals, in order that she might have an opportunity of trying the strength of her poisonous preparations, on the unhappy wretches who came under her care. This is asserted by Pitaval, in the trial of Brinvilliers in the *Causes Célèbres*, and was believed by the public at the time. Voltaire denies it, but only, according to Beckmann, for the pleasure of differing from Pitaval, (*avocat sans cause*, as Voltaire calls him,) and it is admitted by Voltaire that Brinvilliers and Sainte Croix were connected with persons, who were charged with this fiendish practice.

Possessed of this frightful instrument of crime Brinvilliers now disclosed a demoniac temper, such as perhaps no mortal ever exhibited. She bribed La Chausée the servant of Sainte Croix, to poison the magistrate d'Aubray her father, and her brother a counsellor of parliament, who lived at home. Her father took the poison ten times, and her brother five, before they sank under it. An attempt was then made on her sister; but suspicion was awakened; her sister was on her guard, and escaped. The guilty couple proceeded so cautiously, that the suspicions did not fall on them.

An accident betrayed the horrid mystery. Sainte Croix, when engaged in preparing the poisons, was accustomed to wear a glass mask. It happened, on some occasion, to drop off while he was thus engaged, and he was found asphixiated in his laboratory. This account, we must own, sounds suspicious. The object of the mask must have been to prevent his inhaling the fumes of the poisonous drugs which he compounded; but how could he live without breathing? We could almost believe that his fair friend found it at last convenient to close their relations by this summary process. Be this as it will, on searching his effects, a small box was found, addressed in the handwriting of Sainte Croix to the marchioness, with an earnest request in writing, addressed to those into whose hands the box might fall, after his death, that it might be conveyed to her, or if she were not living, that it might be burned. This box was opened, and was found to contain a number of preparations of poison, of different kinds, with labels indicating their quality. When the knowledge of these cidents reached the marchioness, she endeavoured, by bribing the officers of justice, to get possession of this casket; and failing in the attempt, she fled the kingdom. The servant above alluded to, La Chaussée, was imprudent enough to remain in Paris, and falling under suspicion, was arrested, brought to trial, and finally to the confession of several murders, not before suspected. He was broken alive on the wheel in 1673.

The marchioness sought an asylum in a convent at Liege. A very active officer, named Desgrais, was despatched to apprehend her. Unable, without her consent, to remove her from her privileged place of asylum, he put on the dress of an abbe, found means to make her acquaintance, assumed the character of a lover, enticed her in this way to accompany him on a party of pleasure, and arrested her. What a love-suit, a bailiff and a poisoner! Among her effects seized at the convent was a full confession of her crimes, written out in her own hand. She therein admitted, that she had set fire to houses; and that she had by poisoning occasioned the death of more persons than any one suspected. She was brought to Paris, tried, convicted, and confessed her enormities. She even made a show of penitence, and went with great firmness to the place of execution, on the 16th of July, 1676. Beholding the great crowd assembled to see her die, she cried out, in a contemptuous manner, "You have come to see a fine spectacle!" She had flattered herself, on account of her respectable connections, with the hope of a pardon. When undeceived in this respect, she said "*C'est donc tout de bon*," "They are in earnest, it seems," and submitted to her fate. She was beheaded and afterwards burned.

And what imagination have our readers formed of the appearance of such a demon as we have described? Do they suppose she had a deep-set fiery eye, blazing from its socket, with the flames of fiendish passion that consumed her, an aquiline nose, sunken cheeks, thin lips, inflexible and merciless, and a sallow complexion? She was like Anne Turner, uncommonly fair; her features were extremely regular, her face round, full, and beautiful, and she wore a serene look, a tranquillity of air, which seemed to breathe of goodness. So much, cries the bewildered Pitaval, for *metoposcopy!*

But her execution did not put a stop to the horrible practice of secret poisoning. Mysterious deaths were of frequent occurrence, and the archbishop of Paris was informed, from different parts of his diocess, that the crime of poisoning was still confessed, both in high and low families. The number and consideration of the persons suspected was so great, that it was deemed expedient to institute, at the Bastile, a tribunal to detect and punish them. This court was established in 1679, under the name of *Chambre de Poison* or *Chambre Ardente*. Two women, La Vigoreux and La Voisin, a priest named Le Sage, and some others were first arrested, for carrying on a traffic in poisons. They pretended to necromancy and raising the spirits of the departed, and furnished love potions and philtres to those who desired them. Many persons, probably without criminal intentions, urged by curiosity or superstition, resorted these wretched impostors. La Voisin kept a of all her dupes, on the authority of which they were arrested and brought to private trial, before the burning chamber. Some of the first personages of the kingdom were thus implicated;—among them two nieces of the cardinal Mazarin, the duchess of Bouillon, the countess of Soissons, (mother of prince Eugene), and the marshal Luxembourg. Nothing was proved against the duchess of Bouillon, but that she had resorted to Le Sage, in his capacity of sorcerer. He pretended to foretell the future, and to afford those who consulted him, the gratification of beholding his satanic majesty. La Reynie, one of the judges of the burning chamber, was indiscreet enough to ask the duchess if she had ever seen the devil. She replied, that she saw him at that very moment, that he was very ugly and very hideous, and appeared before her in the guise of a counsellor. The prudent magistrate drew off from the interrogation.

A more serious charge was brought against the countess de Soissons and the marshal de Luxembourg. Le Sage, La Voisin and La Vigoreux unquestionably dealt in secret poisons, and particularly in a powder, which had got the name of *succession powder*—from the real or supposed frequency with which it was used to hasten or change the succession, in the families of the rich! The names of all who resorted to them, had been reported to the government, with the charge of purchasing poison. The king intimated to Madame de Soissons, that, if she was guilty, she had better escape by flight. She replied that she was innocent, but could not endure the scandal of a public trial. She repaired to Brussels and died in 1708, about the time that her son, the prince Eugene, by his humiliating victories over Louis XIV., sufficiently avenged his mother for whatever injustice the king had allowed to be done her,—of which, by the way, we do not think she had many to complain of. Great ladies, who go to professed poisoners, to see them raise the devil, must expect some little trouble.

Voltaire states, with great circumstance, that Francis Henry de Montmorency-Boutteville, duke, peer, and marshal of France, who united the great name of Montmorency to that of the imperial house of Luxembourg, already renowned as a great captain in Europe, was denounced to the burning chamber. The foundation of the charge was the following. The marshal wished to recover some lost papers of value. Bonard, one of his people, applied to Le Sage, to know where they were to be found. Bonard's first conjurations were unsuccessful. In despair, he applied to his master, the marshal Luxembourg, for a sort of power of attorney, to do all things necessary to recover the papers; and in this instrument, between the body of the paper and the signature, were two lines, in a different hand-writing, by which the marshal gave himself to the devil. Thus far the charge would have worn the aspect of ridicule; and at the worst, would have seemed a piece of indiscreet trifling, on the part of the marshal. But the wretches, with whom Bonard dealt, on behalf of the marshal and in virtue of his power of attorney, did not, like some others, confine themselves to the settlings of a tea-cup. Le Sage swore that the marshal had applied to him to poison a female, who had the papers in her hands, and who refused to give them up; and his accomplices testified, that they had accordingly poisoned her, cut her body in pieces, and thrown it into the river; and all this at the instigation of the marshal.

Such were the charges against him. He surrendered himself voluntarily to imprisonment. He was confined, by order of Louvois, the minister, who was his enemy, in a dungeon six feet and a half long, where he fell sick. He remained five weeks without being brought to trial. He was finally confronted with Le Sage and one of his confederates, and it appeared and was admitted, that he had once resorted to Le Sage to have his horoscope cast.

Among the crimes with which he was charged by Le Sage, was that of having entered into covenant with the devil, to procure a marriage between his son and the daughter of the marquis de Louvois. In reply to this imputation, he simply said, "When my ancestor, Matthew de Montmorency, married the widow of Louis le Gros, he did not consult the devil, but the states general of France, which declared, that in order to secure to the king, in his minority, the support of the Montmorencys, the marriage was expedient."

The trial of the marshal was prolonged fourteen months, and he was finally released, without being condemned or acquitted. La Voisin, La Vigoreux, her brother, a priest of the same name, and Le Sage, were burned alive at Paris. The marshal de Luxembourg retired for a few days into the country, and then returned to court, to resume his functions, as captain of the guards. He did not see the minister Louvois, nor did the king say a word to him on the subject. He replied to all the charges of all his enemies, by the brilliant achievements of his subsequent campaigns.

Is there no way of bringing these strange incidents within the operation of the common laws of human nature? Undoubtedly. A belief in fortune-telling and divination was universal at this period. The traffic in poisons had accidentally established itself at Paris, at this juncture, and the two trades, by no very violent association, happened to be united in the same hands. The *burning chamber* was a political machine, by means of which Louvois and Madame de Montespan brought the whole court within their grasp, under a charge of sorcery and poisoning. They had got possession of a few wretches, who were unquestionably guilty, and who, from pure malice or the hope of purchasing their own pardon, accused any body, that was odious to the minister or the mistress, and swore to anything that was desired.

The poisoners were executed. Those against whom nothing but divination was alleged were released, the burning chamber was broken up, after about eighteen months' jurisdiction, and poisoning, as an organized business, passed away.

The time would fail us to go much further into particular anecdotes. The duchess of Portsmouth never ceased to charge James II. with poisoning his brother king Charles; and Maria Louisa, daughter of Louis XIV., and Infanta of Spain, was believed to be poisoned, eating an eel pie. The celebrated duke of Orleans, afterwards regent, was so vehemently suspected of poisoning the duke of Burgundy and his son, who stood between him and the throne, that he was driven in his grief and desperation, to demand a judicial inquiry. The clamour was such, that no one (says Voltaire) who had not witnessed, could believe it. The marquis de Camillac found the duke stretched on the ground, bathed in tears, and driven to despair. The warrant for his arrest was actually made out and signed by the king, but suppressed at his mother's intercession.

Is there no moral conveyed by these details? Unquestionably there is. We regard with horror these acts of secret or daring atrocity, we congratulate ourselves that we live in an age, when the poisoner is a rare and solitary criminal. But is not he who maliciously circulates a calumny, the poisoner of his neighbour's good name? Is not he who, for the sake of gain, employs himself in dispensing a maddening liquor to the easily tempted, a poisoner of health and morals? Locusta and Toffana poisoned the body. Is not he who pours into his brother's heart the venom of a bad example the poisoner of the undying soul?

POISSON, M., President of the Académie des Sciences, a peer of France, and a foreign member of the royal society of London, was born in 1781, and his whole life may be said to have been consecrated to the promotion of analytical discovery and scientific investigation. The principal work by which his name became spread over Europe was his "Traité de Mécanique Rationelle," a work in which the deepest powers of analytical calculation are made subservient to the elucidation and demonstration of the various branches of the subject; and which has since become the text book, the *magnum opus*, for all who enter into the subject of mechanics at all profoundly. Among the other works of M. Poisson may be mentioned his "Researches on Planetary Perturbations;" "On the Oscillations of Fluids;" "On the Movement of Elastic Fluids in Cylindrical Tubes;" "The Theory of Wind Instruments;" "The Theory of Heat, and on the Distribution of Heat," and his "Essay on the Doctrine of Chances." In 1825, M. Poisson published his method of comparing the magnetic condition of the earth anterior to its condition as now existing, in which he entered into the inquiry as to whether the action of the earth on the magnetic needle had increased or decreased. Besides these works, M. Poisson published several minor essays on the vibrations of sonorous bodies, the propagation of motion in elastic fluids, &c. M. Poisson was long one of the Examiners of admission at the École Polytechnique, and at the time of his death, which took place on the 25th April, 1840, was president of the academy of sciences, and a peer of France. He was elected a foreign member of the royal society of London in 1818. For some years before his death, he resided at Sceaux, about five miles south of Paris. His funeral was conducted on a scale of unusual ceremony, and was especially remarkable as being attended by all the savans of Paris.

POND, John, an eminent practical astronomer, who for a period of nearly twenty-four years filled the high and important office of Astronomer Royal, died at Greenwich on the 7th Sept. [illegible]. His perception of the capabilities of instruments generally, and of the mode of so using them as to render all their strong points available and their weak ones unprejudicial, formed a very striking feature in his professional character. The numerous bulky folio volumes of his observations, so highly appreciated by scientific men in every part of the globe, are alone sufficient to show the extent and utility of the work performed at Greenwich during the time that the establishment was under his direction. The accuracy of a portion of those observations is to be attributed to improvements in the mural circle, suggested by Mr. Pond, which converted it into the most perfect instrument used in the observatory; but the correctness of the chief part must be ascribed to a mode of observing of which he was the sole inventor. This consisted in the union of the two circles, and the observing with one by direct vision, with the other simultaneously by reflection; thus correcting those errors which are incidental to observations made by a single instrument. A result, and, perhaps, the most important, of the application of the mural circle, has been the formation of a catalogue of the fixed stars more perfect than any before or since produced. Here it may also be stated that the vast superiority of the Greenwich transit observations made by him has been publicly recognised by several contemporary astronomers of the first rank. To his earnest and reiterated solicitations our national observatory is indebted for many of the new instruments which have, confessedly, rendered it so pre-eminent and complete. His skill in the use of these was very remarkable; his talent for observing quite unique; and it is a question whether any of even the most skilful of his countrymen are thoroughly, or at least practically, acquainted with his mode of operation: but MM. Arago, Biot, and Delambre, as well as MM. Bessel and Schamacher, the great French and German astronomers, have borne witness to the decided merit and originality of his method.

Mr Pond contributed many scientific articles to "Rees' Cyclopædia," and wrote the introduction to astronomy prefixed to "Pinkerton's Geography" but, by nature a retiring man, he unwillingly appeared in print, and when called upon to take up his pen, was as brief as the nature of his subject would allow; though neatness and perspicuity characterise whatever he produced. Speaking of his communications to the royal society, Sir Humphry Davy, in a discourse delivered in 1828, on presenting him with the Copley medal, awarded to him by the council of that learned body, "for his various papers on astronomical subjects, expresses himself in the following language:—"The merits of Mr Pond, as an indefatigable scientific observer, are fully and justly estimated by all the fellows of this society who have visited or taken any interest in the royal observatory; but, perhaps, the early devotion of the astronomer royal to his favourite science, the enthusiasm with which he pursued it, and the sacrifices of time, health and money that he made in consequence, may be less generally known. Twenty-five years ago, Mr Pond, animated by his love of astronomy, carried, at a considerable expense, some valuable instruments to the coasts of the Mediterranean, hoping that a purer atmosphere and a brighter sky would give him advantages in pursuing continued observations on the fixed stars not to be obtained in the variable climate of this island; and he passed some time devoted to his scientific objects, at Lisbon, Malta, and Alexandria; but the state of his health obliged im to return, and he established himself at Westury, in Somersetshire, where, in 1800, I had the leasure of visiting him, and when I was delighted o witness the ardour with which he pursued his nquiries, and saw with admiration the delicacy of is observations with the astronomical circle of Mr Troughton's construction. The researches ade by Mr Pond in the declinations of some of he fixed stars in 1800, and published in the Philosophical Transactions' for 1806, fixed the tention of astronomers by their accuracy and clearness of detail, and, probably, principally caused those scientific recommendations which inclined our august patron, the prince regent, to appoint him to the distinguished office he now holds."

Mr Pond's appointment as astronomer royal arose out of his having, while residing in the country, and but little known, communicated to Dr Maskelyne—who was a stranger to him—several corrections of errors in the Greenwich Observations, and in the Nautical Almanac. These induced the latter within a very few months of his decease, to mention him to the council of the royal society, as the fittest man to succeed him. An opinion from such a quarter necessarily had great weight; and having been strongly supported by Dr Wollaston, Mr Pond was, on the death of Dr Maskelyne, in 1810, appointed to the vacant office, on the recommendation of Sir Joseph Banks, to whose discernment and impartiality the government of that period very wisely entrusted its scientific patronage. The salary annexed to the situation of astronomer royal had been suffered to remain miserably low—the great importance and responsibility of the office being considered—for to Dr Maskelyne, a man of large fortune, an increase was no object, therefore, never asked; but it received some augmentation on the appointment of his successor; though the services required, which so very few are qualified to perform, were never liberally or even justly, remunerated, till provision was made for the purpose, on Mr Airy's acceptance of the office.

PONTEFRACT OR POMFRET, a town in the West Riding of Yorkshire, 178 miles from London. It consists of three principal streets, nearly parallel, which are intersected by smaller ones. The streets are spacious and the houses well-built. The trade of the town is inconsiderable, but the place is noted for its extensive nursery grounds, its large plantations of liquorice, from the juice of which the medicine called Pomfret-cakes is made, and its great horse fairs. The old castle of Pontefract, some of the ruins of which still remain, occupied a large site upon an elevated rock, and was the scene of several historical events. It was defended during the civil wars by the partizans of Charles I., but ultimately taken, and soon after demolished. Pontefract is now governed by a mayor, a recorder, four aldermen, and twelve councillors, and it returns two members to parliament. Population of the borough in 1831, 4832; of the parish, which includes five other townships, 9254.

POSTS. (*a.*) The first great reform in the Post Office establishment in this country took place in 1784, when Mr Palmer's celebrated plan of conveying letters by mail coaches was introduced. Before that period, letter-bags were entrusted to boys who were ill-paid, and frequently of very doubtful characters. They travelled upon miserable horses, and were equally unable to defend themselves from the attacks of robbers, or to escape by flight. In fact, the waylaying of these boys for the purpose of robbery was at that time an affair of constant occurrence, and often not without suspicion of collusion on the part of the carriers. The principal feature in the improvement suggested by Mr Palmer was the discontinuance of this horse-post, and the employment of coaches, which, in consideration of their liability to attack from robbers, should each be provided with an armed man to guard them. It formed a part of the proposed improvement that the times of departure of the coaches bearing mails from places in the country should be so regulated as to insure their nearly simultaneous arrival in London at an early hour of the morning, and that the whole should quit the metropolis at the same hour in the evening. The first mail coach upon Mr Palmer's plan left London for Bristol, on the evening of the 2nd of August, 1784.

The difficulties which the projector had to encounter in carrying his proposed improvements into effect might form an instructive chapter in the history of inventions. At the time the management of the post-office attracted Mr Palmer's attention, he was the manager of the theatres of Bath and Bristol, and in the enjoyment of a considerable income. The first circumstance that particularly struck him was the great length of time consumed in the transmission of a letter from London to Bath, a distance of 110 miles. A letter posted in London on Monday evening was seldom delivered earlier than Wednesday afternoon, frequently much later, whilst at the very same time coaches were leaving London on Monday afternoon and reaching Bath by breakfast time the following morning.* The postage of a letter was 6d., the carriage of a parcel 2s., yet Mr Palmer discovered that the tradesmen continually made parcels of their letters, the extra speed being of more consequence than the extra expense. From this individual specimen of the existing arrangements, Mr Palmer carried his inquiries farther: he found that the post-office was as irregular as it was slow; that its robbery was a matter of continual occurrence; that the grossest mismanagement, and the most flagrant abuses, pervaded every department; and, in short, that a thorough reformation was required, both for the sake of the public accommodation, and the government revenue. He immediately devoted himself to the consideration of the remedy, and presented the first rude sketch of his plan to Mr Pitt, the minister, in 1782, with an intimation that he was willing to devote his entire time and attention to the carrying it into operation; that if he failed, he should not expect a shilling for his services, but that, if he succeeded, he expected 2½ per cent. upon the increase on the net revenue. His proposal pleased the sagacious premier, who returned it to him in order that it might be further developed, stating at the same time that the pecuniary proposition was fair, and would not be objected to. Early in 1783 the plan, prepared as desired, was again presented and about to be acted upon, when the administration was dissolved. The new ministers, however, took up the matter, but for the time did no more than transmit the plan to the post-office for the opinion of the authorities. In the interim Mr Palmer travelled through the country to clear up fresh doubts that had been expressed, and from this period appears to have determined to pursue the affair at every personal risk, satisfied that success was feasible, and that a magnificent fortune would ultimately be his reward for all the difficulty, anxiety, and pecuniary danger he had to undergo. In July following, the post-office authorities furnished their opinions in the shape of three volumes of objections! declaring generally that the plan was impracticable, and would be prejudicial to revenue and to commerce. [illegible] the objections offered show the extreme absurdities into which selfishness or bigotry may lead men, even upon matters with which above all others they ought to be the best acquainted. One declared that the coaches went too fast for the proper transaction of the business of the post-office in the different towns, whilst another could not even see why the post-office should be the swiftest conveyance in England. It was asserted that the time for the transmittal of the mails from London, namely, from midnight until two or three o'clock in the morning, could not be altered without throwing the whole correspondence of England into confusion. As to the appointment of a guard, one gentleman observed pleasantly as well as shrewdly, that "he might be waited for at every ale-house he should pass by," whilst another could not "think a guard to each mail would add to its safety;" but the climax of the argument was reached by a third, who, evidently thinking there was danger in too much security, [illegible] the robbers should grow outrageous at such unfair conduct, observed, "that when desperate fellows had once determined upon a mail robbery, the consequence would be murder in case of resistance!" In conclusion, it was stated generally with respect to the affairs of the post-office, "that the constant eye that has long been kept toward their improvement in all situations, and under all circumstances, has made them now almost as perfect as they can be without exhausting the revenue arising therefrom." Seeing all this, we may excuse the merriment apparently produced among these gentlemen at the absurdity of Mr Palmer's idea, that the Bath mail could be brought to London in sixteen or eighteen hours. At all events, whether the plan was or was not practicable, there was no denying the firmness of its author. Instead of listening with humble conviction to the objections urged, he refuted them all, and decided government in his favour. Again delay was caused by a change of administration, but it was Mr Pitt who came into power, and who lost no time in visiting the post-office with Mr Palmer to make the necessary arrangements. Fresh objections were here presented to the minister, the authorities were more than ever convinced that the scheme was impracticable and destructive. Nearly seven more [illegible] were spent by Mr Palmer in collecting information to overcome these new obstacles. at last a meeting took place, at which the postmasters-general and their principal officers were confronted with Mr Palmer, who triumphantly answered all their objections; a trial was peremptorily ordered to be made. On the 2nd of August, 1784, the [illegible] coach left London for Bristol, and others to different parts followed, and, before many days had elapsed, it became evident to every unprejudiced person that the plan would be greatly successful. By the autumn of the same year, that is within twelve months of the commencement of the plan, it had been carried into execution with complete success on the principal and direct cross roads. Mr Palmer now asked for his reward; he applied for the legal instruments of the appointment which had been promised to him, and received a draft thereof, by which he was declared surveyor and comptroller-general of the post-office during life, with full authority to suspend any officers for neglect of his own or the postmaster-general's instructions. His salary was fixed at £1500 a year, with a commission of 2½ per cent. upon the surplus of the net revenue beyond £240,000. This appointment was delayed upon different pretexts from time to time, and was ultimately done away with altogether, and an annuity, large in itself, but which was infinitely below the amount Mr Palmer was entitled to, settled upon him in professed compensation.

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* The slow rate of travelling here mentioned was by no means peculiar to the Bath mail. The post of Monday night from London reached Norwich, Worcester, or Birmingham, only on Wednesday morning, and did not arrive at Exeter until Thursday morning at nine o'clock. Dr Cleland, in his "Statistical Account of Glasgow," tells us that before the introduction of mail coaches into that part of the kingdom in 1788, the course of post from London to Glasgow was five days, the letters being then carried round by Edinburgh. This writer mentions a curious circumstance, which shows how slowly improvement was allowed to proceed in those days. Only five London mails had usually arrived in Glasgow during the week, it not being customary to receive or despatch letters at or from Edinburgh on Sunday; but when the mail-coach conveyance had been brought under Mr Palmer's improvements as far as Carlisle, it occurred to the managers of the post-office that the sixth mail for Glasgow, which the Sunday regulation of the Edinburgh office prevented being passed through that medium, might be conveyed by the mail-coach to Carlisle, and forwarded thence to Glasgow. By this means the sixth mail reached Glasgow in four days, while the conveyance of the other five continued, for a year beyond this time, to occupy five days. It appears to have required the whole of that time in order to discover that the five mails, which required five days to reach Glasgow by Edinburgh, might, like the sixth, be carried by Carlisle in four days.

The beneficial effects of Mr Palmer's arrangements were soon felt. For the nine years ending 1783 (prior to the commencement of the new system), the net amount of revenue from the post-office was only £149,333 18s. In 1793, the net revenue was £391,508; and in 1797, it was £541,833! The facilities afforded for the speedier transmission of correspondence were no less remarkable: generally speaking, the mails were conveyed in one-half of their previous time; in many cases, in one-third of their previous time; and in some of the cross posts, in one-fourth! Posts were made daily to above 500 places, which had before only received them thrice a week! Lastly, the lelivery of letters became as conspicuous for its egularity and adaptation to the public convenience, s it had been previously notorious for the opposite ualities. The safety enjoyed by correspondents ontrasts in an equally extraordinary manner with he previous insecurity. Robberies had been of ontinual occurrence, and the mere cost of the ursuit and apprehension of the offenders amounted a single year to several thousand pounds. There no mystery as to the cause of so wretched a ate of things. Mr Palmer states, in the plan esented to Mr Pitt, that "the mail is generally trusted to some idle boy without character, ounted on a worn-out hack, and who, so far om being able to defend himself, or escape from a bber, is much more likely to be in league with m." Mr Palmer did indeed "reform this altother," for up to 1797 not a single robbery of his ils had taken place, and therefore not a shilling d been lost by the public or expended by the st-office in this way. Most important alterations re made in the domestic management of the st-office. Many gross abuses and equally gross uds were checked or destroyed for ever; the lth and comfort of the clerks were incalculably proved by the abolition of so much midnight ployment; and, generally, the entire system was plified and improved. Lastly, whilst the reue had increased as we have seen, the number newspapers carried free had increased from 00,000 to 8,000,000.

ne part of Mr Palmer's plan had been to raise rates of postage. This was probably proposed uch with the idea of recommending the scheme to the ministers as from any other motive. The rates were in consequence raised in 1784 to 2d. for the letters which had been previously 1d., 3d. for those which had been 2d., and so on generally through the scale. A suggestion of Mr Palmer's as to remedying the abuses of franking was adopted: it was made imperative that members should write the name of the place where they then were, and the date, in words at full, and that the letter should be posted only as a frank in the post-office of such place and on the day thereon named. In the same year the Irish post-office was established independent of that of England, but the two have been now for several years consolidated. In 1795 the abuses of franking again attracted the attention of the legislature; franked letters were now only to carry one ounce, and they were only to pass free when posted within twenty miles of the place where the members concerned were on that or the preceding day. No more than ten also were to be sent or fifteen received daily. Soldiers and sailors were allowed by this act to send letters countersigned by their officers on payment of 1d., and patterns, with covers open at the ends, and containing no writing but the prices, and the name and address of the sender, were to be charged only single postage. Two years after, by the 37th Act of George III., the rates of postage were again raised, an additional 1d. being levied upon the lower priced classes of letters, 2d. on the higher. In 1799 the postmaster was empowered to send foreign letters by any vessels; to charge 4d. upon ship letters received, for which the shipowner was to be allowed 2d. In 1801 the rates of the higher priced classes of letters were considerably increased: 8d. had been hitherto the maximum, even for distances of 500 miles; the maximum was now made 1s. Soon after this, some inconveniences or losses appear to have been incurred by postmasters giving back letters to the professed writers; this was to be done no longer, on any pretence. Members of parliament were authorised at this period to send or receive letters, printed votes, proceedings in parliament, and printed newspapers free, and the postage on such votes and newspapers was reduced to 1d. to the public. The former part of this enactment was probably to legalise a privilege then existing—not to create a new one. It should seem that government thought the continual increase of the net revenue was owing to the continual increase of the rates of postage, rather than, as was most probably the truth, in spite of them; so it went on levying addition charges every few years, till its rapacity defeated itself. In 1805 an additional 1d. was charged upon all classes of letters; and again, in 1812, on all but the two or three lowest priced classes. The following table, illustrative of the progressive increase in the rates of postage from 1765 to 1812, applies strictly to England and Wales only, but shows also with sufficient accuracy the progress of the different rates of postage for Ireland and Scotland:—

	1765	1784	1797	1801	1805	1812
	d.	d.	d.	d.	d.	d.
Not exceeding 15 miles .	1	2	3	3	4	4
Above 20 & not exceeding 30 miles	2	3	4	4	5	6
— 50 — 80 —	3	4	5	6	7	8
— 170 — 230 —	4	6	8	9	10	11
— 400 — 500 —	4	6	8	12	13	14

In 1816 the gross revenue amounted to £2,418,741, the charges of collection of which amounted to £704,639, leaving a net revenue of £1,619,196.

since which time no increase has taken place. By the 6th of George IV. the postage of 1d. on votes, proceedings in parliament, and newspapers, was virtually done away with by the repeal of the regulation requiring that a member's name should be written on the covers. In 1837 the entire body of acts relating to the post-office were repealed, and their chief provisions consolidated into one general statute, 1st of Victoria.

Early in the year 1837 a pamphlet was published by Mr Rowland Hill, developing a plan of a uniform postage, at the rate of one penny per half ounce. The pamphlet commenced with a view of the state of the post-office revenue, and showed that the cause of its stationary condition was the enormous rate of taxation charged upon letters, which was proved to be several hundred per cent. The great extent and universal prevalence of the custom of sending letters by private carriers and by parcels was also shown to be the natural result of the same heavy rates of postage, and that a very low charge, by including all these, would tend in a great measure to make up the loss to the revenue from such low charge being made general. Attention was also called to the certain increase of correspondence, commercial, literary, and domestic, that must result, if the postage were thus reduced. Lastly, the almost incredible fact was stated, that the cost of transit for a letter from London to Edinburgh was only the 36th part of a penny, consequently that there was no coin small enough to denote the difference that should be made between letters transmitted the longest and shortest distances. From all this was deduced the conclusion that 1d. should be the general charge for letters throughout the country. The statements and propositions were illustrated by a great amount of various and interesting information, and by details evidently well calculated for the safe and effectual operation of the plan. The public were at first surprised: some small portion of it, perhaps, thought the scheme simply ridiculous; another, that it was practicable and excellent; but the larger proportion looked upon the idea as too good to be true. Three editions of Mr Hill's pamphlet were called for in the space of a few months; objections were made, but so successfully answered that they forwarded rather than retarded the measure; public bodies began to petition; the press gave its cordial assistance; a committee of the House of Commons was appointed, and the report was highly favourable, though it did not venture to recommend for the time more than a partial adoption of the scheme. Government accordingly prepared to make a partial trial, but by this time the nation had become thoroughly satisfied of its entire excellence and practicability, and the Houses of Parliament and the government were at last fairly petitioned into its complete adoption.

Previous, however, to the entire reduction of the rate of postage to a uniform penny charge, an intermediate measure was brought into operation, by which all single postage rates between places in the United Kingdom which exceeded 4d. should be reduced to that sum: inferior rates to remain undisturbed. This rule continued in practice only from the 5th December, 1839, to the 10th of January, 1840, when the uniform penny postage commenced. On the 6th of May in the same year, the postage stamps, consisting of a profile of the queen on adhesive pieces of paper, and postage envelopes, came into use.

POTATO, (*a.*)* In the beginning of the sixteenth century, the *Spanish* sweet potato, a species of Convolvulus, was common in gardens over Europe. It was first introduced into Spain from the West Indies, and bore the Indian name of Battata. There is also a possibility of its having come to Europe from the east, as it is a native both of India and China. These sweet potatoes were long used in England as a delicacy, and were imported, in considerable quantities, from Spain and the Canary islands, being supposed to have the peculiar property of restoring decayed vigour in men. The famous *kissing comfits*, so much in vogue in Shakspeare's day, and with which our ancestors were imposed upon, as we are by [illegible] pills, and other modern omnipotent remedies, were made principally of these and eringo roots. Falstaff says in the Merry Wives of Windsor,

> "Let it rain potatoes and hail kissing comfits."

The Battata grows abundantly in *Jamaica*, Barbadoes, and the other West India islands, and is propagated, not like our potato, but by slips. The pounded or grated roots make excellent puddings and cakes; and, when mashed and fermented, a cooling and refreshing drink is made from them, called *Mobby*, somewhat resembling small beer.

The potato now in use, the *Solanum tuberosum* of botanists, according to the Spanish historians, was found in cultivation on the first arrival of the Spaniards in Chili and Peru. Peter Cieza informs us, in his Chronicle, published in [illegible], that the inhabitants of Quito, and its vicinity, have, besides maize, a tuberous root which they eat, and call Papas. Molina, in his Natural History of Chili, vol. ii., quotes the authority of [illegible] writers to prove that the plant is indigenous there. He describes two species or varieties, the one wild, and with small bitter roots, the other the one under cultivation; but appears to consider both to have been the same originally,—cultivation rendering the wild plant sweet and succulent, exactly as is the case of our carrot. The Spaniards having introduced these roots into their own country, did not retain their Peruvian name, but, from their similarity in nature to the sweet potato already in use, called them also Battatas. From Spain they were carried into Italy, where they were known by the same name as *truffles*, *taratoufli*. The first European writer (after those alluded to), who [illegible] notice of them, is the famous German [illegible] Clusius, who mentions having received [illegible] in the year 1588, while residing at Vienna, from the governor of Mons, in the province of [illegible] who, it seems, had himself procured them from the attendant of the pope's legate, [illegible] of *Taratoufli*. He gives a plate of it [illegible] rare plants. So much for its introduction [illegible] continent of Europe.

In the year 1584, Sir Walter Raleigh, [illegible] authority of a patent granted by queen [illegible] for discovering and planting new [illegible] sessed by Christians, sent out a number of [illegible] to Virginia. Now, although no [illegible] can be brought forward on the subject, yet, [illegible] concurring circumstances, and from [illegible] appears highly probable that the [illegible] amongst us was first brought to Ireland, [illegible] Sir Walter himself, on his return from his [illegible] or was afterwards sent to him by the [illegible] Virginia. The general opinion is, [illegible] them planted in his own garden near Youghal, in the county Cork. He is said to have given them to his gardener as a fine fruit from America, and ordered them to be put down in his kitchen garden. In August the plants flowered, and in September they produced their apples; but these were so totally different from what the gardener had expected to see, that, in a fit of ill humour, he pulled them and carried them to his master; asking him, "were these the fine American fruit." Sir Walter either really was, or pretended to be ignorant of the matter; and, having tasted them, told the man to dig up the *weeds* and throw them away. The gardener did so, but was astonished to find about a bushel of tuberous roots. Trial soon showed that this was the eatable part of the plant. The only written proof we have of the introduction of the potato by Raleigh, is found in the manuscript minutes of the royal society of London, December 13, 1693, when we are told the president, Sir Robert Southwell, informed the fellows that his grandfather first cultivated potatoes in Ireland, and that he got them from Sir Walter Raleigh. They were cultivated a long time in Ireland before they were known in England, and they were only at last introduced there by the shipwreck of a vessel containing some of them, on the coast of Lancashire, at a place called North Meols, which is still famous for their cultivation.

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* Abridged from an article by Mr [illegible] before the Belfast Natural History Society.

We have thus seen the same plant brought from South America by the Spaniards, and from North America by the English. Now, it is remarkable, that, at the conquest of Mexico, in the reign of Montezuma, the potato was quite unknown in that country. How is it, then, that a plant belonging originally to the southern hemisphere should be found at the foot of the Allegbany Mountains, while it was unknown in the intermediate country, Mexico? Humboldt is the person who agitates this question. He proves satisfactorily that the potato is not indigenous in Peru, nor found wild in any part of the Andes situated under the tropics; no where, in fact, but in Chili, from which place we may conjecture it to have been propagated northwards under the government of the incas. Again, he proves the improbability of the potato having been brought to North America by any of the Peruvian tribes, both from physical and moral causes; and, combining this with the above mentioned singular fact respecting Mexico, starts a new idea, that the English colonists of Virginia themselves procured the plant from the Spanish settlements. "The colony," he remarks, "was in existence from July 1584. Now, the navigators of those times were not in the habit of steering straight westwards to reach the coast of America; they were still in the practice of followng the track indicated by Columbus, and profiting y the trade-winds of the torrid zone. This passage facilitated communication with the West India slands, which were then the centre of Spanish commerce. It appears, then, natural enough that he English themselves brought potatoes from South America into Virginia. At the time when they ame from Virginia to England, they were common oth in Spain and Italy. We are not then to be stonished, that a production, which had passed rom one continent to another, could in America ass from the Spanish to the English colonies."

From all these different considerations, we are most warranted in concluding that Chili alone is e native country of the potato.

The potato was considered a great delicacy in the reign of James I. In the year 1619 we find it mentioned as one of the articles provided for the use of the queen's household. The quantity procured was very small, and the price two shillings a-pound. In the following reign, and during the continuance of the commonwealth, the potato remained equally scarce. Its cultivation, meantime, spread slowly over Ireland, and still more slowly in Lancashire. The first time that it was brought before the public as an object of national importance, was at a meeting of the royal society held in March 1663, when a letter was read from Mr Buckland, a gentleman of Somersetshire, strongly recommending the culture of potatoes in all parts of the kingdom as a precaution against famine. This was referred to a committee, and upon their report, the thanks of the society were given to Mr Buckland, all the members who had lands were entreated to plant them, and Mr Evelyne was directed to mention the matter at the end of his "Sylva," a book then publishing under the auspices of the society. These exertions of a scientific body do not seem to have produced much effect. In books of gardening published towards the close of the seventeenth century, potatoes are spoken of in no very high terms. "They are much used," says one writer, "in Ireland and America as bread, and might be propagated with advantage to poor people." Another says, "I do not hear that it hath been yet essayed whether they may not be propagated in large quantities for food for swine and other cattle." The famous nurserymen London and Wise have not considered the potato worthy of a place in their Complete Gardener, published in 1719; and several other writers speak of it as far inferior to radishes! This was more than 100 years after its introduction. One reason, certainly, that the plant remained so long in disrepute, was the defective mode of its culture. The early planting and late raising of the potatoes, very much injured their quality. This and ignorance of the proper mode of cooking them, would make them certainly anything but a tempting article of food. The following anecdote illustrates this. "A person who had been invited to taste the first potatoes planted in the county of Forfar, about the year 1730, related that the roots had been merely heated, and that they adhered to the teeth like glue, while their flavour was far from agreeable. The food was about to be condemned through the ignorance of the cook, when the accidental arrival of a gentleman, who had tasted a potato in Lancashire, caused the rejected roots to be remanded back to the hot turf ashes, till they became as dainty as they had before been nauseous."

According to the old Statistical Account of Scotland, potatoes were first cultivated in the fields there, in the year 1739, in the county of Stirling: and Dr Walker assures us that they were not known in the Highlands and isles till 1743. It is stated in the General Report of Scotland, (vol. ii. p. 111.) as a well ascertained fact, that "in the year 1725–6, the few potato plants then existing in gardens about Edinburgh, were left in the same spot of ground from year to year, as recommended by Evelyn: a few tubers were perhaps removed for use in the autumn, and the parent plants well covered with litter to save them from the winter's frost." Notwithstanding the success that after this period attended the culture of the potato among the cottagers, its progress among the higher classes in Scotland was retarded by the opinions of the different writers on agricultural subjects, already mentioned. Famine at last gave the great impulse to the cultivation of this root, and during the latter part of the 18th century, it gradually spread over the country, and its excellent qualities became generally understood.

The Netherlands received the potato from England; and from thence it found its way into different parts of Germany. It was very late before it came into general cultivation in Sweden and Denmark, and even Saxony, but in all these countries it is universally used at present. In Switzerland potatoes seem to have been introduced about the year 1720; they now form a principal article of food there. Poland is perhaps as remarkable as Ireland for their extensive cultivation. Of late years they have been introduced into the British settlements in India, and, as bishop Heber remarks, "with great prospect of success. Many places have been found suited for their culture, and though the Hindoos at first were unwilling to adopt the use of them, their prejudices have been gradually overcome, and potatoes may some time hence rival rice in its general utility among them." "It is only within these forty years that any particular attention has been paid in France to the cultivation of potatoes. They were long regarded as an unwholesome plant, and only fit to be eaten by cattle and the most wretched of human beings. It is probable that the French had only cultivated the inferior sorts, and did not know that better kinds could be procured. Parmentier, so distinguished by his zeal for chemistry, was the first who made any successful exertions in behalf of this decried and unpopular plant. He thought that the best plan to introduce it into general use was to make it popular with the higher orders. For that purpose, in 1785, he presented Louis XVI. with a nosegay made with the flowers of the potato, and the sovereign graciously received the emblem of a plant, the most likely of any, to guarantee his subjects against the horrors of famine. This ingenious mode of bringing a plant, which had hitherto been so much despised, into fashion, was eminently successful. The courtiers, always ready to flatter the taste and wishes of their monarch, hastened to cultivate an article honoured with his regard: and thus France, in a great measure, owes the more extensive culture of potatoes to courtly flattery*."

The potato, because it grows under ground, has been usually called a root, but improperly. It more nearly resembles a kind of under ground fruit; and, in conformity with this idea, the French have given it the name of pomme de terre or ground-apple. The potato, in fact, belongs to the class of plants called tuberous-rooted, or those having roundish knobs intermixed with the fibres, which constitute the real roots that draw nourishment from the earth. These tubers or knobs have been considered as so many under ground stems, enlarged by a deposition of farinaceous matter; and when, by any chance, they lose while growing their covering of earth, and continue to grow exposed to the light, they assume the same colour as the rest of the plant. But these may rather be considered as a mode of increase analogous to the viviparous production of a part of the animal kingdom; while the seed or apple from the flower corresponds to the oviparous propagation of birds. Tuberous-rooted plants, therefore, are furnished by nature with a two-fold mode of increase. The potato, besides, may be considered a perennial plant, as it may continue to spring up for many successive years on the same spot. It belongs to the genus of plants called *Solanum*, many species of which, such as the nightshade, are extremely poisonous. In Jamaica, the root of one species is a violent purgative, and a spoonful or two is used by the natives as a dose. It might startle a person at first to find the principal food of a large portion of mankind, drawn from a vegetable belonging to so poisonous a group. Two circumstances also would seem to prove that a portion of deleterious matter does actually exist in the potato. One is, that potatoes, whether in their parent bed or in the pit in which they were preserved after being dug up, if they are uncovered, *take the wind* (as it is called), and become unwholesome food for man, occasioning sickness, and greatly disordering the body. They are easily known by being of a different colour from those of the same crop which lie at a greater depth. These surface potatoes, however, may be used as seed, and besides are not unwholesome for pigs. The other circumstance is, that the liquid contained in raw potatoes must contain some matter hostile to *animal life*, as cattle and hogs have been greatly injured by drinking of the water in which they have been boiled. To counterbalance this, on the other hand, Sir John Sinclair maintains that substances noxious to *animal* life are generally beneficial to *vegetable* life; and with regard to the juices of the potato in particular, that they contain various substances favourable to vegetation, which may be rendered of great use in the irrigation of grass lands. In different quarters of the globe, whole nations subsist on roots which are deadly poisonous in their unprepared state, but which become safe and nutritious when cooked by fire. The most remarkable examples of this are found in the natives of the Molucca and Society islands, and the Indians of South America. In the island of Hayti, the juice of the very root which is used when dressed in the same way as we employ the potato, has been often swallowed by some of the miserable natives to put an end to their existence. Oviedo relates, as an eye witness, that these unhappy creatures, who, like many African tribes, preferred death to slavery, united together by fifties to swallow at once the poisonous juice of the Jatropha.

All vegetable productions affording food are found to contain, in some proportion or other, a farinaceous or granular substance termed starch, which, when dried, may be ground or pounded into flour or meal; and which, if boiled in water, will form with it a pulpy matter. The vegetable substances which contain most of this matter are roots and tubers, these parts of the plant being furnished by nature to contain a store of food, as it were, for the young germ, sufficient to nourish it until the production of members or instruments capable of collecting nutriment for it after its evolution, precisely analogous to the provision of [illegible] in the egg of a bird for the young [illegible] it. From accurate chemical examinations, it has been found that in every 100 parts of the potato, there are about 70 parts of water and [illegible] meal, which is a powder of a greyish colour, having the taste of the raw root. This meal being submitted to further analysis, is found to be composed of three different substances. 1st, Starch or fecula, 16 parts; 2d, *Leafy* or fibrous [illegible] parts; and, 3d, Soluble mucilage, 5 parts. The potato also contains a very small portion of potash, and a few other substances, such as oxides of iron and manganese, common salt, &c., but in such minute quantities as not to affect the general statement. An essential oil likewise exists in the potato, which gives its taste, but this is also very trifling. The composition of the potato root is extremely similar to that of the seeds of wheat and maize, though, from the dissimilarity in taste and external appearance, this would not be at first suspected; and hence arises the corresponding fitness of all three for food. The principal difference between wheat and potatoes consists in the presence of a substance called *gluten* in wheat, which strongly resembles animal glue, and which is the cause that wheat, rye, and barley are the only kinds of grain of which loaf bread can be made; this *gluten* giving tenacity and firmness, while it at the same time promotes the fermentation in the making of bread, as well as gives it its taste. In potatoes, oats, beans, peas, rice, maize, buckwheat, &c., this is entirely wanting, and therefore they must be mixed with a certain quantity of flour before they can be made into bread.

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* Sir John Sinclair.

There is perhaps no species of food that can be consumed in a greater variety of ways than the potato. Among us the only modes in use are three or four, such as boiling, roasting, or frying; but our French neighbours, who surpass us and all the world in everything relating to cookery, at least so far as infinite variety is concerned, have several other ways of preparing this root. A French gentleman invited to dinner thirty-two of his friends, promising to each a different dish, and yet all composed of the same material. They assembled, found before each seat a cover, and, upon taking their seats, discovered that each guest had really a different dish, though all formed of eggs! One of the company immediately repeated the invitation to all the persons present for next day, when he promised to regale them in a similar manner, on another single substance metamorphosed into thirty-two different forms. They came and dined very comfortably on thirty-two distinct and palatable dishes, all composed of potatoes! Boiling is the simplest, cheapest, and perhaps most nutritious mode of cooking the potato. When boiled, the nourishing substances contained in it are taken into the stomach, more intimately diffused through about three times their weight of water, than is the case with any artificial mixture of the potato-meal and water. Hence the easiness of digestion and lightness of this root above almost all other farinaceous substances equally nutritive; while its cheapness, and the ease with which it can be cooked, are great arguments in its favour with the great body of the people. Every one knows that, simple as the process of boiling a potato appears, there is really a peculiar art or dexterity required; and it is often remarked, "that good potatoes are less frequently to be seen at the tables of those who keep professed cooks than in the wooden bowl of the peasant." But the fact is, that in the one case there is only one dish to attend to, whereas in the other there are many, and that the potatoes of the cottager are consumed *hot from the fire*, as soon as they are ready, which is not the case in the other instance. Next to boiling, roasting the potato is the mode most employed; but this is exceptionable, as the root retains in it much of that black unwholesome liquid already mentioned. This resides principally in the skin, and hence those persons who have been tempted to eat the roasted skin, have been often seriously disordered by it. Custom, however, is found to render the stomach callous to its effects, as is evident from the practice of the children of the Irish peasantry. Throughout all Ireland it is usual to allow the little children in every cottage to *roast potatoes* for their own use, as often they please, in the turf ashes.

The first manufactured ingredient derived from the potato was starch. This substance, formerly obtained from wheat alone, was first discovered in the island of Chios, in the Grecian Archipelago, and was in common use among the Romans. The potato starch is made by the simple process of grating the roots into clear spring water, when it separates from the other particles, and sinks to the bottom. It is a very remarkable circumstance, that in *frosted* potatoes, it is only the *juice*, or liquid part of the root that is affected, and not at all the farina or flour, which may be equally well extracted, and will be found as white and good as if it had not been frozen, provided the root is not quite rotted, which in process of time it will become. The following singular illustration of this took place in 1794: A field of potatoes at Camstradden, in Dumbartonshire, was laid under water, by a sudden rise of Lochlomond. A quantity of these was got up, and in part brought home. Being wet, they were laid on the floors of out-houses to dry; but in a few days they were so spoiled as to be unfit for feeding cattle. A heap of the potatoes was left on the ground; when turned over next spring, some starch was found at the bottom, which excited a suspicion, that though the root had been affected by the frost, yet that the flour had remained uninjured. This was found to be the case; and a quantity of the farina was collected from the heap, part of which was distributed in Dumbartonshire, and the remainder was brought to Stirling, in 1804. As arrow-root had become fashionable about that time, it was often used as a substitute; and many eat of it without knowing the difference. In 1825 a dish of it was made with milk, and two gentlemen who supped on it, declared that they would not have known it from arrow-root. A specimen of this same flour of 1794 was sent to Sir John Sinclair in 1826, and it seemed as good as any produced from the potatoes of that year, after having been kept for above thirty years. Potato-flour is very easily converted into jelly, in the same way as arrow-root, by gradually pouring into it some boiling water, and stirring the mixture about; and in this shape it is strongly recommended as food for invalids, sometimes being taken with a little milk and sugar. With the addition and thorough mixture of a little wheaten flour, or ground rice, while it is boiling, it forms a pleasant and nourishing diet either with or without milk. It is well known that the manufacture of bread, even when conducted by the most skilful and experienced bakers, is sometimes very difficult. From the various casualties to which wheaten flour has been liable, from disease in the crop, or bad management in the keeping or grinding of the grain, it frequently loses some of its most essential qualities, and causes the bread, in defiance of the baker's art, to contract a sourness, which is both disagreeable to the taste, and prejudicial to health. Fortunately a remedy has been discovered of late years; that of mixing with the flour a small quantity of *potato-starch, previously converted into a* *jelly*. This kind of bread is remarkably light, and keeps longer moist than other bread. It toasts much better, and makes better bread puddings. Another most important use to which potato-flour can be applied, is to give it, boiled in milk, in the proportion of *two* spoonfuls of flour to *one* pint of milk, to young children, brought up by hand, and not at the breast, or after they are weaned from the breast. A great quantity of starch is consumed in making what is called the *dressing* for weaver's webs. Until of late, this was entirely made from wheat, and still a great proportion of it is so. But if potato starch were universally adopted for the purpose, as is the case now throughout France, a very great consumption of wheat would be saved. This substance is also put to another use, namely, the making of size, which, for some purposes, such as white-washing, is greatly superior to common size, as it has no offensive smell, and has a more durable whiteness.

The next useful product derivable from the potato is sugar. The discovery by chemical analysis, that the potato, though far different in form, taste, and all external qualities, was perfectly similar in component parts to the different kinds of grain used for the food of the man, led naturally to inquiries, whether the products derived from these grains, by submitting them to different chemical operations, might not be procured also from this root. Complete success was the consequence. It was found, among other things, that a substance, possessing all the properties of sugar, though differing a little from that of the sugar cane, could be procured by a simple operation from the potato. Until lately, however, the discovery was considered only as a matter of curiosity, and was mentioned only among men of science. Experiments were tried, on an extensive scale, in the United States of America, to ascertain whether, in districts where the potato grows abundantly, this sugar might not be made advantageously both to the population of the district, and to the manufacturer himself. The potatoes were ground by a very ingenious and simple method, by exposing them through a box or hopper to the action of a wooden cylinder, having nailed upon it long strips of iron punched full of holes, to give them a rough grating surface. This cylinder was driven by a band of leather attached to the drum of a water-wheel. On filling the hopper with potatoes, and giving the grater the necessary motion, the potatoes were reduced with surprising rapidity to a fine pulp, from which, by the aid of a sieve and water, the starch, in great purity, was readily obtained. This apparatus ground 3500 bushels of potatoes without the least repair. The starch thus obtained was then dissolved completely in water, heated by steam let into it. A certain quantity of sulphuric acid, or vitriol, was then mixed with it, and heat being applied, the whole of the starch was converted into syrup. This was purified from the acid by adding quicklime, and then evaporated; when the result was an excellent sugar fit for all domestic purposes. A bushel of potatoes, weighing 60 lb., gives 8 lb. of pure dry starch; and from these 8 lb., 7½ lb. of sugar are obtained. This sugar ferments briskly, when made into beer, and yields a healthful and pleasant beverage. It will be of most use, however, for making sweetmeats, and may be used at table in place of honey, for which it is a good substitute. It has already become a great favourite with most persons who have become acquainted with it. Its taste is that of a delicious sweet, and as an article of diet it is probably more healthful and less oppressive to the stomach, than any other sweet substance in use.* Potatoes are used extensively in the eastern part of Russia for making treacle, which is quite as sweet and good as that which we obtain from the tropics, but having less consistence.

As all substances containing saccharine matter are capable of producing ardent spirit, we would naturally be led to expect, from the foregoing remarks, that it might be procured from the plant; and such is the fact. In 1747, experiments on the distillation of brandy from potatoes were made in Sweden, and the result was so favourable that it was proposed to substitute them in a great measure for grain. In England Dr Anderson was the first who obtained spirits from this plant, and the account which he published of his experiments is very interesting. The potatoes were boiled to a pulp, bruised, and the skins thrown away. Water was then added, and a great quantity of yeast mixed with it. In twelve hours it fermented, and this was kept up by occasional stirring for a fortnight. The liquor, which was now slightly acid, was distilled, and, from seventy-two lb. of potatoes that had been used, was obtained a gallon of pure spirit considerably above proof, and a quart more below proof. "This," says the doctor, "was in every respect the finest and most agreeable vinous spirit I ever saw. In taste it somewhat resembled brandy, but it was more mild than any brandy I ever tasted; and had a certain kind of coolness on the palate peculiar to itself, by which it might be readily distinguished by a nice judge from any other kind of spirit. Its flavour more nearly resembled brandy impregnated with the odour of raisins and raspberries, than anything else to which I could compare it. A single glass of it put into a bowl of rum punch, made it appear as if it had consisted half and half of rum and brandy, impregnated with the juice of raspberries. It seemed to derive its flavour from a subtile essential oil of a very singular kind." "I have been at great pains," continues the doctor, "to describe this kind of spirit in its state of perfection, because I have since heard of and seen some spirits said to be drawn from potatoes, which, from want of skill or caution on the part of the operators, were intolerably nauseous."† It has been supposed, as before remarked, that, with proper management, potatoes might form a cheaper material than barley to extract spirits from; and accordingly, in the isle of Guernsey, there was a distillery where they were used with success; and, in 1821, there were actually in Paris [illegible] distilleries for extracting brandy from the potato starch, and nearly as many more within a circle of eight leagues round it. In 1822 these [illegible] a stop to, for some reason connected with the revenue laws.

The next product of the potato is a kind of *cheese*. The manufacture of this is carried on in Thuringia and Saxony, and it has the advantage of retaining its freshness for several years, provided it be kept in close vessels. It is prepared by boiling the potatoes, and reducing them, when cold, to a pulp, rejecting the skins. Sour milk is added, or else sweet curd with the whey pressed out, in the proportion of a pint to five lb. of pulp. [illegible] kneaded several times, drained in small baskets, and simply dried in the shade.

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* Silliman's Journal.

† Bath Society Papers.

In some parts of Germany potatoes are put to another use. The lower classes are accustomed to incorporate them, after being steamed and reduced to a paste, with the butter to be spread over bread. It thus goes farther where economy is studied: and that it may longer be preserved, is often salted.

It will surprise many to learn, that a mode has been suggested by a French chemist for converting potatoes into a substance resembling *coffee*. He mixes some best olive-oil with a certain portion of dried potato-flour, and then adds a small quantity of coffee-powder. He asserts that this will produce a liquor more agreeable than coffee.

Chemical ingenuity has likewise converted this most useful root into substitutes for many other articles; as chocolate, tapioca, and vermicelli. A chemist in Copenhagen has discovered that the lowers of the plant may be used in dyeing. By this means a beautiful yellow colour may be obtained, which is solid and durable. By plunging he colour into blue, it becomes a perfect green. It has likewise been found, that the juice contained n the potato will produce a gray colour of great beauty. The liquor drawn off in the process of making potato-starch will clean silks, woollens, r cottons, without damage to the texture or olour. It is also good for cleaning wainscots.

Potatoes are used with excellent effect in the oilers of steam engines, for preventing the gathering of a calcareous incrustation on the bottom, which is gradually deposited from the water emloyed. The potatoes give out a glutinous subtance which entangles the particles in the water, nd prevents them from incrusting the iron of the oiler. A medical use of the potato has been lately uggested in a valuable French publication; namely, s a preventive of, and even cure for, the scurvy. oasted potatoes were administered with perfect uccess to sailors afflicted with the disorder, after ther approved medicines had been given in vain. s *roasted* potatoes are the most effectual, it eems probable that the remedy depends on some the substances contained in the black liquid hich boils out of potatoes, and which is retained roasting.

PRESCOT; a town in the county of Lancasr, on the great road between Liverpool and anchester, 197 miles from London, and 8 east om Liverpool. It is situated in the neighbourod of extensive coal-mines, from which Liverol is chiefly supplied with fuel. The Liverol and Manchester railway passes about one ile from the town. The parish church, dedited to St Mary, is an ancient edifice: in the ar 1789 the old steeple was taken down and reced by an elegant tower and spire. Prescot has g been noted for the manufacture of watch tools, also part of the watch called movement work. e small files manufactured here are said to be best in the world, and great numbers are anlly exported. Several manufactories of coarse thenware, some of which are famous for the king sugar moulds, are established here. The ton business, though not conducted here to any at extent, gives employment to many. Popuion of the town in 1831, 5055; of the whole ish, which embraces fourteen other townships, 034.

PREVOST, PIERRE, a voluminous writer on jects chiefly of natural science, and the translator, also, of many English works into French, was born in 1751, and was originally destined to follow the profession of his father, who was one of the pastors of Geneva: at the age of twenty, however, he abandoned the study of theology for that of law, the steady pursuit of which, in time, gave way to his ardent passion for literature and philosophy; at the age of twenty two, he became private tutor in a Dutch family, and afterwards accepted a similar situation in the family of M. Delessert, first at Lyons, and afterwards at Paris. In this latter city he commenced the publication of his translation of Euripides, beginning with the tragedy of Orestes; a work which made him advantageously known to some of the leading men in that great metropolis of literature, and led to his appointment, in 1780, to the professorship of philosophy in the College of Nobles, and also to a place in the academy of Berlin, on the invitation of Frederick the Great. Being thus established in a position where the cultivation of literature and philosophy became as much a professional duty as the natural accomplishment of his own wishes and tastes, he commenced a life of more than ordinary literary activity and productiveness. In the course of the four years which he passed at Berlin, he published *Observations sur les méthodes employées pour enseigner la morale; sur la théorie des gains fortuits; sur le mouvement progressif du centre de gravité de tout le systéme solaire; sur l'origine des vitesses projectiles; sur l'économie des anciens gouvernements; sur l'état des finances d'Angleterre;* and he also completed the three first volumes of his translation of Euripides. There were, in fact, few departments of literature or philosophy which were not comprehended in the extensive range of his studies and publications. In the year 1784, he returned to Geneva to attend the death-bed of his father, when he was induced to accept the chair of belles lettres in the university, an appointment which he found on trial little suited to his taste, and which he shortly afterwards resigned. For some years after this period, he was compelled, more by circumstances than by inclination, to partake largely in those political discussions, which, for some years, agitated his native city, and which afterwards, resumed upon a wider theatre, shook to its centre the whole framework of European society; but he gradually withdrew himself from political life on his appointment to the chair of natural philosophy in 1792, and devoted himself from thenceforth, with renewed activity and ardour, to pursuits which were more congenial to his tastes. In 1790, M. Prevost published his *Memoire sur l'équilibre du feu*, and in the following year his *Recherches sur la chaleur:* these important memoirs were followed by many others on the same subject in various scientific journals; and the general results of all his researches and discoveries were exhibited, in a systematic form, in his well-known work *Sur le calorique rayonnant*, which was published in 1809, and in which he fully developed his *Theory of Exchanges*, and was enabled to give a consistent explanation of the principal facts which were at that time known respecting the nature and propagation of heat. He contributed papers to the Transactions of the Royal Society of London in 1797 and 1803; the first containing an explanation of some optical experiments of lord Brougham, and the second, some remarks on heat and on the action of bodies which intercept it, with reference to a paper by Dr Herschel; and in

1806, he became one of the foreign members of the Royal Society. In 1799, he obtained the first *accessit* for an essay *Sur l'influence des signes relativement à la formation des idées*, which was written for a prize, adjudged to the celebrated Degerando, proposed by the Institute of France: and he was shortly afterwards elected a corresponding member of that body. His *Essais de philosophie, et études de l'esprit humain*, appeared in 1804, to which were appended some very remarkable essays of his friend and ancient preceptor Le Sage, of whom he published a most interesting life in the following year. He likewise published, in very rapid succession, translations of the Rhetoric of Blair, the Essays and posthumous works of Adam Smith, the Elements of Philosophy of Dugald Stewart, the Essay on Population of Malthus, Salt's Travels in Abyssinia, the Conversations on Political Economy, by his wife's sister-in-law, Mrs Marcet, and many other works of less importance and interest. In 1823, at the age of seventy-two, though still vigorous and active both in body and mind, he resigned the professorship of natural philosophy, in wise anticipation of the approach of that period of life when men naturally feel reluctant to acknowledge the decline of their faculties, or incompetent to perceive it. From this time, though still consulted by his colleagues and fellow citizens on every important subject connected with the academy or the state, he retired into the bosom of his family, which contained within itself, in a very uncommon degree, every element of tranquillity, contentment, and happiness. His own temper was singularly equable and tranquil; and his tastes and pursuits, which rarely left his time unoccupied, saved him from that *tædium vitæ* which sometimes renders old age querulous and discontented. Thus happily disposed and happily circumstanced, it is not wonderful that his life should have been prolonged beyond the ordinary limits of humanity. He died on the 8th of April, 1839, in the eighty-eighth year of his age, surrounded by his family, and deeply regretted by all who knew him. The philosophical character of M. Prevost had been greatly influenced by that of his master Le Sage, a man of great originality and profundity of thought, but whose speculations, particularly those which attempted the explanation of the cause of gravity, trespassed somewhat beyond the proper limits of philosophy. We consequently find him disposed to explain the laws of the propagation of heat and light on the most simple mechanical principles, and to trace their origin and progress much further than the experiments or facts will properly warrant; thus giving to his conclusions, in many cases, a much more hypothetical character than would otherwise have attached to them. M. Prevost had little acquaintance with the more refined resources of modern analysis; and his researches on many important branches of experimental and philosophical inquiry were consequently limited to reasonings which could be carried on by the most simple algebraical or geometrical processes. But, notwithstanding the restrictions which were thus imposed on his progress, the range of his philosophical researches was unusually extensive and various, and his discoveries on heat must always be considered as constituting a most important epoch in a branch of science which has recently received so extraordinary a development in the hands of Fourier, Forbes, Melloni, and other philosophers.

PRICE, MAJOR DAVID, Bombay army; member of the royal Asiatic society, and of the royal society of literature, was a native of Wales, where his father was a clergyman. In 1780, he embarked for India, having obtained the appointment of a cadet in the army there. On the voyage thither, his vessel, the Essex, bore a distinguished part in the skirmish between the squadron of Admiral Suffrien and commodore Johnson at Porto Praya bay, off the island of St Iago. Immediately on his arrival in India, he as an acting ensign, was thrown into active service on the Coromandel coast, under general Sir Hector Munro, and at Trincomalee, with the naval force of admiral Sir Edward Hughes. He afterwards distinguished himself in the wars with Tippoo Saib. At an unsuccessful attack on the fort of Darwar, on the 7th of February, 1791, he was severely wounded in the arm and ankle, rendering necessary the amputation of his leg. On the surrender of the fortress he proceeded to Poona, where he remained attached to the military escort of Sir Charles Malet, the political minister at that court, until the peace of Seringapatam. He was then removed to a civil situation at Surat. It was in this city that he made his celebrated collection of Persian and other historical works. He had there leisure to pursue his researches, assisted by most of the standard historians of Persia and Arabia, which terminated in the publication of that great repository of Mahommedan history, of which further mention will presently be made. In 1795, being a captain by brevet, he was appointed judge advocate of the Bombay army. This office he held until his departure from India. He was present at the memorable repulse of Tippoo's vigorous attack on the Bombay army, before its junction, and afterwards at the operations of the siege and capture of the Sultan's capital. The Bombay army appointed captain Price their prize agent for that splendid booty, seldom, if ever, surpassed, as to amount, by any conquest of a British army. After arranging the slain sovereign's magnificent assemblage of jewellery, his fine library, and other matters connected with that confidential appointment, captain Price returned to Bombay, and prosecuted with eagerness and industry his compilations and translations from his valuable collection of Persian manuscripts. In June, 1804, he attained a majority; and in February, 1805, after a continued service in India of twenty-four years, he sailed from Bombay, arrived in England in September following, and in October, 1807, he finally retired from the service.

Major Price repaired to Brecon in South Wales, and married most happily soon after his arrival in England. He became a magistrate of that borough and of the county of Brecknock; and there completed and printed the result of the laborious research of half an industrious life in four quarto volumes, under the title of "A Chronological Retrospect; or Memoir of the Principal Events of Mahommedan History, from the death of the Arabian Legislator to the Accession of the Emperor Akbar." The oriental translation committee numbered major Price among the distinguished scholars whose translations of the "Autobiography of the Emperor Jehangir," and of the "Last Days of Krishna," were published by that committee; and in June, 1830, its gold medal was presented to him, as a mark of the committee's estimation of his talents and labours. Subsequently to the pubmittee published his translation of "An Account of the Siege and Reduction of Chaitur, from the Akber Nameh of Abal Fazl." To the transactions of the royal Asiatic society, he contributed, "An Extract from the Mualijati Dara Shekohi." The MS. of the valuable work from which this translation was made, was included in major Price's munificent bequest to the Society of his collection of oriental manuscripts. The collection, here and before mentioned, extended to nearly ninety volumes. Major Price died on the 16th of December, 1835, aged seventy-three.

PRINGLE, Thomas, a highly esteemed poet and miscellaneous writer, was born in Tiviotdale, a romantic pastoral district in the south of Scotland, of which he has left some pleasing remembrances, in the poetry which from time to time he gave to the public. He applied himself early in life to literature, as a profession; and was concerned in the establishment and early management of "Blackwood's Magazine;" shortly after, however, he chose to follow the fortunes of his family, who became settlers in South Africa. There, after a time, Mr Pringle entered into some literary speculations in Cape Town, which, however, he was speedily forced to relinquish, by the government, at a pecuniary loss of little less than £1000. Upon the failure of these speculations, he returned to England; and his services were soon after engaged by the Anti-Slavery Society, as secretary to that body, a situation which he continued to hold until the object of the society was accomplished; and the duties of which responsible office, he discharged, not merely as one expected to labour for hire, but as one whose heart was in the cause of humanity and justice. As a poet, Mr Pringle's "Ephemerides" abound in graphic pictures of African scenery; and are rich in evidences of the kind and Christian spirit which accompanied the writer, in all that he did or wrote. As the editor of "Friendship's Offering," too, he brought to his task a sound judgment and a refined taste. The last work in which he was engaged, and which he finished only a month or two before his death, was the revision of his volume entitled "African Sketches," with a view to a second edition. Early in 1834, the rupture of a blood-vessel confined him to a sick bed, and greatly reduced the energies of a naturally strong constitution; and towards the autumn it became apparent, that, for the preservation of life, a removal to a warmer climate was indispensable. Mr Pringle's circumstances not permitting a trial of the south of Europe, he again turned his thoughts towards the Cape; the necessary preparations were hastily completed; the passage money was paid; and it wanted but three days of the time appointed for sailing, when a diarrhœa began to show itself, under which the powers of nature, already enfeebled by confinement, speedily sank. He died Dec. 5, 1834, exhibiting to the end that moral courage for which he had ever been remarkable, and supported by the recollection of a well spent life, and by the hopes that spring from religion. Few men were richer in friends than Mr Pringle; among their number we might enumerate most of he literary men of the day, and very many of those public men, who have made philanthropy the beacon of their political career: and although he disharged, during many years, with a fearless and onest zeal, the duties of an office which exposed im to the bitterness of party spirit, no man, perhaps, ever had fewer enemies, or descended into the grave with fewer animosities.

PRONY, Gaspard-Clair-Francois-Marie Riche de, was born 22ud July, 1755, at Chamelet, in the present department of the Rhone. At the age of twenty-one he was admitted into the Ecole des Ponts et Chaussées, and soon distinguished himself by his successful application to the severer mathematical pursuits of that establishment. Perronet, at that time chief of the school, took considerable notice of him, and, in 1783, recommended him to the minister as a fit person to second himself in the important works on which he was then engaged, and which, from his advanced age, he found it too arduous to perform without help. The celebrated Monge also discovered his worth, and became his teacher in the higher branches of analysis. In 1785 M. de Prony went with Perronet to Dunkirk, to undertake the restoration of the port; and ultimately went with him to England, where they stopped some time. In 1786 M. de Prony was ordered to draw up a plan for the erection of the Pont Louis XVI. at Paris; and after being admitted, as an honorary exception, to a discussion on the subject before the council of Ponts et Chaussées, was appointed director of the works. The government discontinued, in 1791, the appointment of M. de Prony as assistant to M. Perronet; but, with an honourable feeling, he continued to discharge his duties as before without salary, until the death of that gentleman in 1793. During this period he had enjoyed opportunities of studying practically the greatest operations thus carried on by the state, and the amount of engineering knowledge which he had acquired was very considerable. The first volume of a work on hydraulic architecture was published by him in 1790, but he subsequently relinquished the idea of finishing the work. Towards the end of 1791 he had been named engineer in chief at Perpignan; but a few months after, on the government deciding to draw up the *Cadastre*, or great territorial and numerical survey of France, he was charged with the superintendence of that immense undertaking. The political events that succeeded each other so rapidly at that period in France did not permit of his taking much part in the practical survey; but his time was fully occupied with the direction of the matter, and several other important operations were successively entrusted to his care.

One of these arose from the new metrical system just then adopted, requiring that fresh trigonometrical should be calculated, adapted to all astronomical and geodesical calculations. The government of the day, which, in some of its decisions, was guided by ideas of no small grandeur, applied to M. de Prony for the calculation of tables on the centesimal scale; and, in its instructions delivered on this occasion, desired him to take care that, "while the tables should be as exact as possible, he should make them the greatest and most imposing monument of calculation that had ever been executed or even thought of." M. de Prony, fully competent to the gigantic task, and worthy of the confidence of the state, set himself to work with the most indefatigable industry, summoning to his aid, at the same time, a large body of experienced calculators. The story goes that, wishing to find a large number of ordinary arithmeticians for the subordinate parts of the work, he took into his employment all the *perruquiers* of the capital whom he could find, and who, by the revolution, had been driven to great distress from the total destruction of their trade. In less than two years M. de Prony had finished tables containing 10,000 sines in natural numbers to 25 places of decimals, with 7 or 8 columns of differences; 2,000 logarithms of sines and tangents calculated to 14 places of decimals, with 4 columns of differences; 10,000 logarithms relative to the proportion of sines and tangents to arcs, with 3 columns of differences, for facilitating interpolation in calculations relating to small angles; the logarithms of the first 10,000 numbers calculated to 19 places of decimals, and the logarithms of numbers from 10,000 to 200,000 calculated to 14 places of decimals, with 5 columns of differences. This immense collection, forming seventeen volumes folio in MS., was to have been printed by Didot, according to a contract passed between that eminent typographer and the government; but the fall in value of the *assignats*, and other independent causes, hindered the projected impression from being completed. This great monument of the industry and talent of M. de Prony has ever since remained in the library of the observatory at Paris; and it is high time that the French government should give it to the world, since the Chambers voted a bill for the legal re-establishment of the metrical and decimal system in all its purity from January 1, 1840.

In 1798 M. de Prony was named director-general of the Ponts et Chaussées, having already, in 1794, been appointed professor of Mechanics at the Ecole Polytechnique, on the first establishment of that celebrated institution. He had also been elected a member of the academy of sciences of the institute. Napoleon, on his return from Italy, took notice of M. de Prony, and made him some advantageous offers at the time of the expedition to Egypt, to accompany the French army to that country. M. de Prony refused, and Napoleon never forgave him. Once, when emperor, one of the ministers recommended him as a suitable person for one of the new dignities then about to be bestowed; but the emperor's reply was—"Il ne faut pas mettre son rabot en dentelles, on ne pourrait plus s'en servir pour raboter." (You must not wrap your plane up in lace, or you'll not be able to plane with it.) Notwithstanding the apparent coolness of the emperor he had the highest opinion of M. de Prony's talents, and employed him from 1805 to 1812 on important missions in several parts of France. It was in Italy, however, that his official occupations principally lay, where he executed several large works connected with the Po, and the ports of Genoa, Ancona, Venice, Pola, and the Gulf of Spezzia. The improvement of the Pontine marshes also fell to his lot; and gave rise to a very valuable geographical and hydrographical account of them, which he took the pains to draw up.

At the restoration M. de Prony ceased to be a professor of the Ecole Polytechnique, but continued attached to that establishment as permanent examiner. In 1827 he executed several missions in the departments, and especially in that of the Rhone, where he was consulted on the formation of some extensive embankments. He was named a supernumerary member of the Bureau de Longitudes in 1805, and was elected full member in 1817. He was also a member of the royal society of London (elected in 1818), and of almost all the scientific societies of Europe. M. de Prony had been one of the earliest chevaliers of the legion of honour, and was made an officer of it in 1814. in [illegible] he was named Chevalier de St Michael, and, in 1828, was created a Baron by Charles X. He was made a Peer of France by Louis Philippe in 1835. His death took place on the [illegible] July, 1839. Besides the works mentioned above, M. de Prony's other contributions to [illegible] [illegible]teen volumes, 4to. He had a brother, better known by the family name of Richie than that of Prony, who was a distinguished naturalist, and formed part of the expedition sent out to search for the unfortunate La Peyrouse, dying in [illegible] from the fatigue he experienced on his long cruise.

PRUSSIA. (*a.*) *Statistics.*—In the twenty-five government districts of the Prussian States, the amount of births and deaths, during the year 1836, was—births, 550,622; deaths, [illegible]: the increase, therefore, through the surplus of births was 175,034. In the year 1835 this surplus amounted to 152,272: the increase in the two years was, therefore, 327,306. The total number of inhabitants at the end of the year [illegible], was 13,509,927; accordingly, the number of inhabitants in the Prussian dominions, exclusive of the principality of Neuchatel, at the end of the year 1836, was 13,837,233. In this number is not included the surplus of immigrations over emigrations, which, however, must be in every case considerably less than the increase of population by the surplus of births.

The following was the number of inhabitants of every age and rank in the Prussian dominions at the end of 1836, taking into the account the increase of births since the last census:—

In the *government districts* of Konigsberg, 740,829; Gumbinnen, 549,410; Dantzig, [illegible]. Marienwerder, 487,443; total in the province of Prussia Proper, 2,118,652. In Posen, [illegible]; Bromberg, 374,082; total in the province of Posen, 1,152,298. In Potsdam, [illegible]. Frankfort, 728,914; total in the province of Brandenburg, 1,691,764. In Stettin, 457,536; Coslin, [illegible]. Stralsund, 157,865; total in the province of Pomerania, 971,012. In Breslaw, [illegible]; Oppeln, 773,542; Lignitz, 809,585; total in the province of Silesia, 2,594,862. In Magdeburg, [illegible]. Mersburg, 638,442; Erfort, [illegible]; total in the province of Saxony, [illegible]. In Munster, 405,661; Minden, 419,144; Arnsberg, [illegible]; total in the province of Westphalia, [illegible]. In Cologne, 420,391; Dusseldorf, [illegible]; Coblentz, 464,911; Treves, 450,343; Aix-la-Chapelle, 369,494; total in the provinces of the Rhine, 2,455,091.

Total number of inhabitants in the whole Prussian dominions, as before stated, [illegible].

The relative numbers of the births, deaths, and the proportionate surplus of the former, as shown by the census made at the end of 1834, varied considerably in particular government districts in the course of 1836, as the following statement, taken on an average population of 100,000 souls, shows:—

	Births.	Deaths.	Surplus.
In the Government districts of—			
Coslin, ...	[illegible]	[illegible]	[illegible]
Stettin, ...	[illegible]	[illegible]	[illegible]
Marienwerder, . . .	[illegible]	[illegible]	[illegible]
Bromberg, ...	[illegible]	[illegible]	[illegible]
Frankfort, ...	[illegible]	[illegible]	[illegible]
Dantzig, ...	[illegible]	[illegible]	[illegible]
Stralsund, ...	[illegible]	[illegible]	[illegible]
Posen, ...	[illegible]	[illegible]	[illegible]
Potsdam, ...	[illegible]	[illegible]	[illegible]
Mersburg, ...	[illegible]	[illegible]	[illegible]
Dusseldorf, ...	[illegible]	[illegible]	[illegible]
Minden, ...	[illegible]	[illegible]	[illegible]

	Births.	Deaths.	Surplus.
Treves,	3855	2508	1347
Arnsberg,	3953	2708	1245
Magdeburg,	3784	2557	1227
Coblentz,	3949	2739	1210
Erfort,	3894	2706	1188
Konigsberg,	4071	2957	1114
Cologne,	4073	2962	1111
Oppeln,	4810	3761	1049
Breslaw,	4118	3070	1048
Aix-la-Chapelle,	3726	2697	1029
Gumbinnen,	4141	3127	1014
Lignitz,	3930	3149	781
Munster,	3169	2471	698
In the Prussian doms. generally,	4076	2780	1296

There were more births than deaths in all the government districts, and in the above table the order of the districts is ranged according to the amount of the surplus of births over deaths.

The marriages in the Prussian dominions, during the year 1836, are distributed to their respective government districts in the following table, which exhibits both the total number in each district, and also the relative proportion of the district marriages to the 100,000 inhabitants, according to the census taken at the end of 1834:

	The total number of Marriages contracted in the Government Districts, during 1836.	The average number of Marriages on 100,000 Inhabitants.
Konigsberg,	6770	931
Gumbinnen,	5060	932
Dantzig,	3253	978
Marienwerder,	5059	1073
Posen,	7110	938
Bromberg,	3796	1048
Potsdam, with Berlin,	8849	940
Frankfort,	6245	879
Stettin,	4015	904
Coslin,	3075	896
Stralsund,	1502	976
Breslaw,	8982	906
Oppeln,	8147	1075
Lignitz,	7511	941
Magdeburg,	5328	923
Mersburg,	5490	884
Erfort,	2588	885
Munster,	3384	846
Minden,	4053	995
Arnsberg,	4385	908
Cologne,	3699	899
Dusseldorf,	6833	937
Coblentz,	3849	850
Treves,	3465	790
Aix-la-Chapelle,	2963	819
In the Prussian States,	125,391	928

Thus, all the districts taken together, brings the year 1836, with reference to the number of marriages, into the category of ordinary, medium years; since, on the average of 100,000 inhabitants, 928 new marriages were contracted, which is equivalent to saying, that out of rather more than every 107, and less than every 108, existing contemporaries, one matrimonial union was formed. The number of the existing marriages, according to the last census, made at the end of 1834, amounted to 2,278,333. There was then, for every 1000 of these marriages, on an average, 55 new marriages in 1836, or there were very nearly 6 new to every 109 of the existing marriages—that is, almost 1 new to 18 of the old.

The number of children born in wedlock, in the course of 1836, was:—

Boys,	263,960	
Girls,	248,500	
Together,		512,460

Out of wedlock:—

Boys,	19,540	
Girls,	18,622	
Together,		38,162
Total,		550,622

Accordingly, of 100,000 children, 6931 were illegitimate; and therefore less than $\frac{1}{13}$ but more than $\frac{1}{15}$ of the children born were illegitimate; or, to be more accurate, of all the children born, $\frac{7}{101}$ were illegitimate.

These, also, have been the usual proportions for several years past in the Prussian dominions.

The proportion of the census made at the end of 1834, to the number of illegitimate children born in the course of 1836, is very different in the several districts. There occurred, for example, upon 100,000 inhabitants:—

In the Government Districts.	Illegitimate Births.
Breslaw,	407
Dantzic,	399
Potsdam, with Berlin,	397
Stralsund,	392
Lignitz,	387
Mersburg,	375
Konigsberg,	357
Magdeburg,	339
Frankfort,	336
Stettin,	301
Erfort,	282
Gumbinnen,	278
Coslin,	275
Oppeln,	265
Marienwerder,	236
Bromberg,	224
Minden,	224
Posen,	218
Arnsberg,	210
Cologne,	208
Treves,	149
Dusseldorf,	139
Aix-la-Chapelle,	135
Coblentz,	130
Munster,	94
In Prussia for every 100,000 inhabitants,	282

In the great towns of Prussia, the proportion of the illegitimate children born during 1836 to the number of inhabitants, in the census taken at the end of 1834, was as follows, on every 100,000:—

Towns.	Illegitimate Children.
Breslaw,	65
Konigsberg,	61
Berlin,	60
Posen,	60
Dantzic,	52
Cologne, with Deutz,	49
Stettin,	43
Magdeburg,	38
Aix-la-Chapelle,	25
Elberfeld, with Barmen,	16

It is ascertained, by experience, that in a great part of Europe the number of males, in comparison with females, does not bear the same proportion among illegitimate children as among those born in wedlock. In the fifteen years from 1820 to 1834, on an average, for 10,000 females, the males were—born in wedlock, 10,597—the illegitimate, only 10,310: the surplus of boys, therefore, in the first case, amounted to nearly 6, and in the second case to only $3\frac{1}{10}$ per cent. In the single year, 1836, the difference was less; for instance, in that year there were, for 10,000 female children 10,622 males born in wedlock, and 10,494 illegitimate. Whether the difference between the one surplus and the other be merely an accidental fluctuation or a permanent change, has not been determined.

Prussian Commercial League. There is, perhaps, no measure connected with commerce that has occasioned so much discussion in the present day as the Prusso-Bavarian league, which, under the name of *Zoll Verein*, has united, for the purposes of trade, ten of the otherwise independent states of Germany. The arrangements for perfecting this union were in progress during many years, and it came into practical operation at the beginning of 1834. Previous to that time, the states of which the union is composed, did not allow of the introduction of merchandise across their respective frontiers without the payment of a duty; and in some cases, where domestic industry was to be "protected," the importation of many articles was prohibited. The principle of the commercial league is to destroy all the frontier custom houses between the leagued states; to allow of the freest intercourse between the subjects of all the different states composing the union; and thus to give to the inhabitants of each the fullest advantage to be derived from a community of interest, and from extending, in a most important degree, their markets for supply, and the field for the exercise of their industry. Duties on the introduction of merchandise from countries not comprised within the union have, since the 1st of January, 1834, been collected at one uniform rate at custom houses established on the exterior boundaries of the frontier states; and a principle for dividing the amount of the duties thus collected has been adopted between the governments, without any consideration as to which is the country for whose immediate use the importations are intended, or to any circumstance other than the proportionate amount of population.

The following table exhibits the names of the different states composing the league, the area of each, the number of its inhabitants, and the proportionate amount which each is entitled to receive out of the entire collections made in the custom houses of the frontier states

States of the Confederation.	Area in German Geographical Square Miles.	Area in English Square Miles.	Number of Inhabitants.	Deductions for Military and Independent Districts.	Number of Inhabitants by which the Distribution of Revenue is regulated.	Per Centage Proportions of the Joint Revenue.
Prussia and its Dependencies,	5,157·21	108,126	13,800,126	109,473	13,690,653	54·36
Bavaria,	1,477·26	31,250	4,252,813	1,695	4,251,118	16·94
Saxony,	271·68	5,749	1,595,668	..	1,595,668	6·36
Wurtemburg,	355·15	8,150	1,631,779	..	1,631,779	6·50
Electorate of Hesse,	162 10	3,633	700,227	59,653	640,574	2·55
Grand duchy of Hesse,	179·25	3,798	769,691	..	769,691	3·07
Thuringia,	223·49	4,940	908,478	..	908,478	3·62
Grand duchy of Baden,	279·54	5,915	1,232,160	..	1,232,160	4·91
Duchy of Nassau,	82·70	1,750	373,601	..	373,601	1·49
	8,248 38	174,335	25,264,668	170,821	25,093,847	100.00
Free city of Frankfort,	4·33	92	60,000	..	60,000	*
	8,252·71	174,627	25,324,668	170,821	25,153,847	

The districts comprehended in the above abstract under the title of Thuringia, comprise:—

	Sq. German Miles.	Population.
Saxe Meiningen, ...	41·72	146,324
Saxe Altenburg, ...	23·41	117,921
Saxe Coburg Gotha, ...	37·60	129,740
Swarzburg Sondershausen (Upper Lordship), ...	16·90	23,750
Swarzburg Rudolstadt (Upper Lordship), ...	19.10	60,332
Principality of Reuss, ...	27·94	99,676
Weimar Eisenach, ...	66·82	226,664
Districts belonging to Prussia, included in the area of that country,	..	88,534
Districts belonging to the Electorate of Hesse, ...	..	26,153
District of Kaulsdorf, belonging to Bavaria, ...	..	434
	223·49	908,478

On the supposition that the real and single object of this peaceful confederation is, that which its promoters have put forth to the world, viz., to simplify the fiscal arrangements of the countries by which it is adopted—there can hardly be formed two opinions in regard either to its wisdom or to the benign influence which it is calculated to have upon the minds and feelings of those who are brought within its operation. It seems, however, to be very generally believed and understood that the object thus avowed is not, so far at least as the chief mover in the plan is concerned, the sole or the chief motive which has led to its adoption, but that political views, extending beyond the interests of the present day, and tending to the aggrandisement of Prussia, have been the real incentives to the scheme. This belief is greatly confirmed by the facts, that, for a time at least, the revenue which Prussia will draw as her share of the duties on importation will not be of so great amount as her previous receipts from the same source; and that the unlimited competition that is now afforded to the manufacturers of [illegible] must act injuriously upon various branches of industry within the Prussian states, which it had previously been the policy of that government to encourage and protect. The obvious conclusion to be drawn from these circumstances is, that Prussia, in consenting to give up a considerable part of her revenue, and to forego the full advantages of branches of domestic industry to which she had previously looked as an element of strength, has the certainty of future indemnification to an extent beyond the amount of her present sacrifice, and this indemnification can only be found in the extension of her political influence.

It may be asked why, if this result be so certain and so obvious, the other states of which the union is formed have been drawn to consent to a scheme, which, although it brings some present profit, will, in the end, be productive of loss to them in the same proportion which Prussia will then realize of gain? It is not possible to go into an examination of the motives by which each of the states has individually been swayed to the course it has adopted, but there are two motives common to the whole, which have, probably, more than all others, influenced their determination. With the exception of Prussia, all the members of the league would immediately enlarge the sphere of their commercial dealings in different proportions, varying from six-fold in the case of Bavaria to almost seventy-fold in the case of Hesse, and more than four hundred fold in that of the city of Frankfort. The degree of activity which this would give to the population in all their various relations must needs occasion an accession of commercial prosperity which would ensure the popular favour to the alteration. This is one of the incentives, and perhaps the most powerful of the two. Then the increase of revenue by which it would be attended, and still more the mode of the collection of that revenue, would render the executive governments in so far independent of their "states" or legislative chambers, and could not fail to recommend the system to the rulers at a time when the temper of the times rendered the absence of collision upon such a subject peculiarly desirable. We may add, to these reasons, the effect that had been produced upon the public mind throughout the smaller states by popular writers, who, in pointing out the unity which the league was to impart to Germany, had flattered the pride of the people by their descriptions of the power and influence which would thence be given to them among the nations of Europe.

It has been mentioned that the arrangements for establishing the Zoll Verein were in progress during several years. Conferences upon this subject were held in Darmstadt as early as [illegible], between

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* The per centage proportions for the division of the Revenue were fixed before the city of Frankfort joined the league. The same proportions are still preserved, but Frankfort's share, calculated upon the same principle, is deducted previous to the apportionment between the other states of the union.

the agents of Bavaria, Wurtemburg, Baden, Nassau, Saxony, and some other less important states; and these conferences were renewed from time to time, but were finally broken off in April, 1823. Four years afterwards, a treaty was concluded between Wurtemburg and Bavaria, the same in principle as that subsequently formed between Prussia and the states which comprise the existing Union. Next followed the treaty of Prussia with Hesse, in February, 1828; and in the following September, while the former country was endeavouring to make terms with Wurtemburg and Bavaria, and to induce them to adopt her tariff—points in which she succeeded—a third association, under the name of the *Mittel Verein*, or middle association, was formed at Cassel between Saxony, Hanover, Hesse Cassel, Brunswick, Hamburg, Weimar, the towns of Frankfort and Bremen, and some of the minor German states. The first and leading conditions of this association will serve to mark the feeling of jealousy with which the designs of the parties to the other two leagues were viewed. It provided that, during six years, none of the contracting parties should relinquish their commercial alliance, nor treat with either the Bavarian or the Prussian league. Prussia soon found means, however, to detach some of its members from the Mittel Verein; and although the remaining members entered into a new treaty in 1829, by which they bound themselves to continue in alliance until 1840, some of its more important branches fell off from it, and the Mittel Verein was dissolved. The negotiations by which these results were produced occupied some years in their discussion; and it was not until the 1st of January, 1834, as already stated, that the Zoll Verein took the consistent form which it has since maintained.

Many of the independent states in the north of Germany have hitherto withstood the temptation offered by Prussia, to bring them within the league: among these are Hanover, Brunswick, Mecklenburg-Schwerin, Oldenburg, and the free towns of Hamburg and Bremen.

The tariff of Prussia was more unfavourable to the admission of British goods than that of the other states with whom she has made this league; for which reason its progress was watched with considerable jealousy by the merchants and manufacturers of this country, who feared, with great apparent reason, that their trade would suffer in every case where additional rates of duty were mposed. From the manner in which the trade accounts are kept at our custom-houses, it is not possible to enter upon any minute examination of his question, because they afford us no means for eparating the trade carried on with the countries hat form the league from that maintained with ther parts of Germany. If we include, as we herefore must do, the shipments of British produce and manufactures made to all Germany, in ach of the ten years from 1827 to 1836, it will e seen that their average annual value has been 4,646,862., while their average annual value in e three years subsequent to the commencement the league on 1st January, 1834, has been 4,690,760. The amount in each of the ten ars has been remarkably steady, as will be seen om the following figures:—

		£			£
1827	—	4,828,956	1832	—	5,327,553
1828	—	4,573,249	1833	—	4,499,727
1829	—	4,662,566	1834	—	4,683,589
1830	—	4,641,528	1835	—	4,791,239
1831	—	3,835,768	1836	—	4,624,451

These figures do not afford any ground for complaint, on the part of this country, but it is probable that the full effects of the union in discouraging the importation of foreign manufactured goods has not yet been experienced.

The cotton manufacture of Saxony has already become of twice the extent that it had reached before the union, while the linen and woollen manufactures of that country have not experienced any increase. The reason for this difference is, that the persons engaged in the latter, which are more ancient branches of industry in Saxony, are so far "protected," that it is necessary to serve a regular apprenticeship and to obtain admission into the guilds or corporations established in the manufacturing towns, before any man is allowed to carry on the business; while the recently established cotton manufacture is without restriction or regulation of any kind, so that any person who can purchase or hire a loom is at liberty to become a cotton weaver.

The manufactures are greatly encouraged by the miserably low rate of wages in Saxony. It is stated on the best authority, that in October, 1837, "a man employed in his loom, working very diligently from Monday morning until Saturday night, from five o'clock in the morning until dusk, and even at times with a lamp, his wife assisting him in finishing and taking him the work, could not possibly earn more than twenty groshen, (2s. 6d. sterling) per week, and that another man who had three children aged twelve years and upwards, all working at the loom as well as himself, with his wife employed doing up the work, could not earn in the whole more than one dollar eight groschen (5s. 4d.) weekly.

The wretched manner in which the poorer classes in that country subsist may be inferred from the fact exhibited by official statistical returns that the annual consumption of meat in the principal manufacturing districts, including the town of Chemnitz, does not average more than twenty-eight pounds for each individual of the population, and that at least one half of this quantity consists of pork. If this provision were equally divided among the entire number of inhabitants, it would amount to scarcely more than half a pound weekly for each individual; but as the actual distribution is of course very different from this, it is probable there are many among the labouring artisans who rarely, if ever, taste animal food. The quantity of cotton hosiery made in Saxony has increased immensely of late, and from its cheapness has not only secured the monopoly of the markets afforded throughout the union, but has also been shipped largely to the United States, to the exclusion so far of the goods made at Nottingham. It may be stated, on the respectable authority already quoted, that cotton gloves are furnished by the Saxon manufacturers as low as 6 groschen or 9d. sterling per dozen pairs; stockings, at 1 dollar or 3s. per dozen pairs; and nightcaps, at 8 groschen or 1s. per dozen. Stout cotton caps, which are worn by the carmen and common people in that part of Germany, having stripes in six different colours upon a black ground, cost 12 groschen per dozen, or 1½d. sterling each.

These low prices are not the result of the same cause which has gradually reduced the cost of production in this country. Hitherto the machinery used in Saxony has been of the commonest sort, so that the cheapness of the manufactured goods has been owing to the low rate of wages, a rate which compels the artisans to labour long and diligently in order to insure for their families the scantiest supply of the most common of the necessaries of life. The capital of the English manufacturer which empowers him to employ the most perfect machinery, joined to his greater experience, have hitherto enabled him to compete successfully in most branches of skilled labour, but these are advantages which cannot be long retained in competition with greatly reduced wages. The profits which the Saxon manufacturers are thence enabled to realize will speedily lead to the introduction of improvements that will place our dearer processes at a still greater disadvantage.

The want of capital, which has hitherto been the chief obstacle to the still greater extension of the cotton manufacture in Saxony, would in time be remedied by the successful operation of the existing establishments, but the manufacturers of that country, unwilling to wait for a gradual development of their resources, have had recourse to the expedient of establishing joint-stock companies. The total capital of associations of this character that have been recently formed, and which are now proceeding to the completion of their various objects, amounted [illegible] 1837, to nearly thirteen millions of dollars, about two millions sterling, a large sum for that country, and the greater part of which is furnished by the bankers and other capitalists of Leipzig.*

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RAILWAYS, (*a.*) The attention of the public has been recently attracted to the subject of the establishment of a general system of railways in Ireland, and opinion appears to be much divided as to the policy of the government interfering either to promote or regulate this undertaking. The experience of Belgium, the European state which has first adopted a government system of railway communication, may throw some light upon the subject, and in some degree tend to the settlement of a question which is of momentous importance to Ireland, and which, in conjunction with other measures at present in operation, holds out the prospect of great and lasting improvement to that country.

Belgium, as we have said, is the first state in Europe which has established a general system of railways, embracing the whole of the kingdom, and planned and executed by the government at the public cost. The project was first put forth in the year 1833, and the object proposed was to unite the principal commercial towns on one side with the sea, and on the other with the frontiers of France and Prussia. In this respect Belgium is most favourably situated for the experiment of a general system of railways: it is of a compact form, of moderate extent, surrounded on three of its sides by active commercial nations, and on the fourth by the sea, which separates it only by a few hours' voyage from England. On its western side are the two large and commodious ports of Antwerp and Ostend, and its eastern frontier is only a few leagues distant from the Rhine, by which it becomes united to Southern and Midland Europe. Hence it possesses a near market for its productions, and offers many facilities for an extensive transit trade. The nature of the country, also, is most favourable, being generally very flat, and requiring but few of those costly works of levelling, tunnelling, and embankment, which have so swollen the expense of similar undertakings in this country.

The first step which the government took for the accomplishment of its object was, to employ a number of competent engineers to survey the kingdom, and to determine the main lines with reference not only to the general features of the country, but also to the interests of the several large towns, and to their internal and foreign relations. On the 1st of May, 1834, a law was passed authorizing the government to carry these proposals into execution. Mechlin was taken as the centre of the system, with four branches extending from that town, in different directions, to each frontier:

Northward,—to Antwerp.

Eastward,—by Louvain, Liège, and Verviers, to the frontiers of Prussia, whence it was expected that it would be continued by a private company to Cologne.

Southward,—through Brussels and the province of Hainault, to the French frontier near Valenciennes.

Westward,—by Dendermond, Ghent, and Bruges, to Ostend.

It appears doubtful whether Brussels or Mechlin is most favourably situated for the central station. The former is the seat of government, and is in a rather more direct line from Ostend, on the western frontier, to the eastern boundary; but, on the other hand, the line selected through Mechlin passes by more large towns, and the distance between Antwerp and the eastern frontier is rendered much shorter than if the line were carried through Brussels. Other considerations may have tended to influence the choice of the Mechlin line; but it is understood that regret is beginning to arise that Brussels was not made the centre of the system.

The total length of the lines proposed by the first law was 239¼ English miles.

The following sections were opened at the annexed periods:—

From Mechlin to Brussels .	[illegible] miles, on	[illegible]
— Mechlin to Antwerp	[illegible] —	[illegible]
— Mechlin to Dendermond	[illegible] —	[illegible]
— Mechlin to Louvain .	[illegible] —	[illegible]
— Louvain to Tirlemont	[illegible] —	[illegible]
— Dendermond to Ghent	[illegible] —	[illegible]
Carry forward	[illegible]	

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* 'The Progress of the Nation,' by G. R. Porter, Esq.

Brought forward . .	88·54		
From Tirlemont to Waremme	16·88	—	2d April, 1838.
— Waremme to Ans (near Liege) . .	11·87	—	
— Ghent to Bruges . .	27·65	—	12th Aug. 1838.
— Bruges to Ostend .	14·60	—	28th Aug. 1838.
Total . .	159·54 miles.		

By a subsequent law, dated the 26th of May, 1837, the government was authorized to extend the system by the construction of a line from Ghent through Courtray to the French frontier, on the road to Lisle, with a branch to Tournay; and by uniting the provinces of Namur, Limbourg, and Luxembourg, to the original system, by means of branch railways. The length of these additional lines will be from 90 to 100 miles. Some of them are already finished, and others commenced.

Thus the Belgian government has undertaken the task of establishing a general system of railways in that country, uniting the principal towns in the manner most advantageous to the general interests of the kingdom, without overlooking the particular interest of the several localities. The people have had the advantage of a much earlier introduction of this important means of communication, than if the undertaking had been left to private speculation,—without risk to individuals, —without the interference of private interests,— on lines, perhaps, which of themselves would have offered no temptation to private enterprise, but which as part of an extensive system will repay, either directly or indirectly, the money expended upon them. The government will, in all probability, recover its outlay from the profits of the undertaking, but will assuredly be repaid by an augmentation of revenue arising from the increased commerce and traffic throughout the kingdom. If t be objected that the government will be enabled o exercise too despotic a power over the means of public communication, the experience of similar rivate undertakings in our own country may give ise to a question whether the control of the state s likely to be more absolute than that of the di- ectors of a chartered railroad.

The Belgian government, however, does not restrain private enterprise upon any other lines than hose entering into the general system; and among umerous applications already made it has granted wo lines, one the Upper and Lower Flénu, in ainault, and the other from Charleroi to Vireux- pen-Meuse, on the French frontier.

All the railways established by the government, ere formed with provision for a double line of ils, but only one line was originally laid down, it ing the intention to add a second by degrees, ac- rding to the wants of the traffic. Between russels and Antwerp, the double line was com- eted in 1837. The same plan of commencing th a single line has been generally adopted in the nited States. This circumstance must be borne mind in considering the following statement of e expenses of construction.

The cost of ten sections, comprising the ex- nses of locomotive power, stations and buildings, s about £1,360,000, or £8.526 a mile. It ap- rs from an account of the expenses up to Janu- 1838, that the cost of construction alone ounted to 86·8 per cent. of the sum then ex- ded; and that of locomotives, carriages, sta- ns, and buildings, to 13·2 per cent. The out- upon each of the six lines open at the latter iod, was as follows:—

	Length. Miles.	Total Cost.	Average Cost, per Mile.
From Mechlin to Brussels	12·61	L.75,716	L.6,004
— Antwerp .	14·60	124,775	8,546
— Dendermond	16·59	76,044	4,583
— Louvain .	14·76	108,428	7,346
Louvain to Tirlemont .	11·03	128,628	11,661
Dendermond to Ghent .	18.95	105,784	5,582
Total . .	88·54	L.619,375	L.6,995

The cost, however, of four sections completed afterwards appears to have been considerably greater, and to have amounted to £10,432 a mile. The expense from Brussels to Antwerp, with a double line of rails, was £7,368 per mile; and that of the four other sections, with a single line, was £6,829. This comparatively greater cost of the latter was owing to the numerous works of art, bridges, viaducts, cuttings, and fillings, and particularly to the tunnel, of 984 yards in length, between Louvain and Tirlemont. It is worthy of notice, that the estimates of the engineers made in 1833 were exceeded on the above four sections by only 8 per cent.

Let us now compare these results with the cost of similar undertakings in this country, and elsewhere. The lowest sum yet incurred in the construction of a well-executed railway in England, is stated to be £10,000 a mile. This was the amount on the Newcastle and Carlisle, and on the Wigan lines; but of the former only about one-half the length was laid with a double line of rails. Others, however, (exclusive of lines in the vicinity of the metropolis, the cost of which is enormous,) have amounted to £40,000 a mile. The cost of the Manchester and Liverpool line was £38,553 per mile; of the Warrington and Newton, a branch of the latter, £12,470; of the Leeds and Selby, £10,500; of the Dublin and Kingstown, £41,823. The short line from London to Greenwich, of only three miles cost more than £600,000, or £200,000 a mile. The estimated cost of the forty-four railways for which acts were obtained in 1836 and 1837, was £25,692,500; their length, 1,457 miles; and the average estimated cost per mile, £17,600. But this estimate fell considerably short of the real expense. A striking instance of the insufficiency of the parliamentary estimates is afforded by the London and Birmingham railway. The estimate was £2,500,000; the cost, up to 30th June, 1838, £4,553,557, exhibiting an excess over the estimate of 82 per cent.; and a further sum of £500,000 was then required to complete it. It may be difficult to foresee all the contingencies which are likely to arise in the construction of a railway; but some measure appears necessary to prevent so great a discrepancy between the estimates and the actual cost. In France, the estimated expenses of four different projected lines between Paris and Havre, vary from £15,400 to £21,400 a mile. In comparison, therefore, with England or France, Belgium possesses great advantages in the cheap construction of railways; but it falls as far short, on the other hand, of the United States of America. There the cost is stated to fluctuate between £2,000 and £6,000 per mile; and Mr Porter gives an instance, in the second volume of the "Progress of the Nation," (p. 76), of a railway in that country which cost only £1,312 4s. per mile, and even that amount was greatly enhanced by a change in the mode of construction introduced after the line was completed.

This enormous difference of cost, not only between lines situated in different countries, but between several in this country, constructed under similar circumstances, suggests an inquiry into the causes of such a disproportion. The following have been enumerated as the most prominent:—

1st. Excessive parliamentary expenses incurred through contests carried on during one, two, or even more sessions, in obtaining a bill. This cause of expense arises out of competition between opposing lines, which is sometimes real, but more frequently fictitious, and is instituted by interested parties, not perhaps in their own names, but in those of the landowners. In many cases this charge alone, even in very long lines, has exceeded £1,000 per mile. The following statement will afford some notion of the sums which have been expended under this head. In some cases the amount contains the expenses of surveying, and other disbursements, which necessarily precede the Act of Incorporation. On the other hand, it exhibits only the costs defrayed by the companies obtaining the act, exclusive of those incurred by the different parties opposing the bill in parliament.

Statement of expenses incurred in obtaining Acts of Incorporation for the following railways:—

London and Birmingham .	£72,868
Great Western . . .	88,710
London and Southampton . .	39,040
Midland Counties	28,776
Birmingham and Gloucester . .	12,000
Great North of England . . .	20,526
Grand Junction	22,757
Bristol and Exeter . . .	18,592
Total . . .	£303,269

The total estimated cost of these eight railways was £11,595,800; the above item amounted to two and a half per cent. of that sum, or nearly £500 per mile. If the same ratio be applied to the 1,475 miles, for which acts were obtained in 1836 and 1837, the amount spent in those two years under this head would be £729,500. The most extravagant, however, of the above cases, has been far surpassed by the charges attending the contest between the parties supporting the five several lines from Brighton to London. The amount has not been published, but it must have been very great; and the event was, that the government was obliged to employ an official engineer to report upon the several lines, and upon that which appeared to him the most expedient. This source of expense, it is obvious, would be in a great measure avoided by the government undertaking the responsibility of the undertaking.

2nd. The enormous demands for compensation by proprietors, through, or near, whose land the proposed line passes, and who withhold their assent, till purchased by the company on the most ruinous conditions. There are instances in which this species of extortion has amounted to £10,000 per mile. One case was the subject of a trial in the court of chancery, in which a nobleman in the county of Essex obtained from the directors of the eastern counties railway, in consideration of his withdrawing his opposition to the bill, £20,000 for land belonging to him required by the company; and £100,000 for the injury done to his estate. It is true that the avowed object of the individual in question was to oblige the company to select another line, and that the purchase might have been avoided by the adoption of that line. The latter course, however, was not followed, and an action having been brought to compel the fulfilment of the contract, the court decided in favour of the validity of the deed, and the equity of the case. One of the grounds of his lordship's objection to the railroad passing through his property is matter of record: the following is a quotation from the vice-chancellor's judgment:—"It further appears from his lordship's affidavit, that his lordship was very partial to the old English amusement of fox-hunting, which was a source of high gratification not only to himself, but to all the gentlemen in the county. His lordship's high feeling naturally prompted him to stand forward as a champion against any violence of that healthful amusement, in which they had all so long participated." The contrast afforded by the United States of America is very striking. Mr Fripp, in his account of the New York and Erie railway, mentions, that "besides the support granted by the State Loan, donations of great value have been made to the company by individuals owning lands on the route of the railway. These donations amount to some thousand acres of land: for instance, [illegible] acres in one county only, proffered by the proprietors for the purpose of inspiring confidence in the stock, providing for dividends, and the payment of interest, and to secure the speedy construction of the road." The circumstances of the two countries, it is true, are very different, but the fact deserves notice, as it exhibits one of the causes of the superior cheapness in the construction of railroads in the latter country.

A remarkable instance of the prevalence of the same system of extortion in France is afforded by the adjudication of the jury of expropriation upon a part of the Versailles and St Cloud railway. In one case, the lessee of a field at Versailles demanded £849 for one acre of land, and produced documents, signed by some architects of that place, in support of his estimate. It was, however, reduced by the jury to £16. Another proprietor claimed £265 for the suppression of a right of way across his land: the company offered him [illegible] for it, and the jury awarded him nothing. The whole amount claimed was reduced from [illegible] to £25,626.

A fair estimate of the proportion which the cost of land and compensation bears to the entire expenses of the railway, may be formed from the average results of two of the principal lines already completed:*

	Total Cost	Land and Compensation	[illegible]	[illegible]
Grand Junction .	[illegible]	[illegible]	[illegible]	[illegible]
London & Birmingham	[illegible]	[illegible]	[illegible]	

If the same proportion be applied to the railways which have been actually commenced since the year 1830, and of which the estimated cost amounts to about £40,000,000, the sum payable to owners of lands and houses will be [illegible]; and if one-fourth (a very moderate allowance) be added for deficient estimates, the total amount will be nearly £7,000,000. The effects of the diversion of so large a capital into a new channel, of the unexpected acquisition of a large amount of ready money by the agriculturist, of the destruction of houses in the suburbs of towns, and the impetus thereby given to the building trade, are well worthy of consideration, apart from the other consequences attending the construction and operation of railways.

3rd. Extravagant expenses are often [illegible] companies pushing the termini of their lines too far into the centre of towns, and by carrying their lines through towns, in order to effect which it becomes necessary to purchase much valuable property.

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* The exact proportion on the Liverpool and Manchester line cannot be given, but it rather exceeded the above average.

4th. Engineers, it is believed, have incurred heavy, and sometimes ruinous, expenses, in order to render their lines mechanically as perfect as possible, without duly considering whether the advantages thus obtained will compensate for the expenditure requisite to produce them. By admitting a certain degree of undulation, accommodated to the natural inequalities of the ground, very large savings may often be effected, without introducing any serious impediments to the working of the lines. It is also in the heavy parts of the work, in cuttings and embankments, that many of those unforeseen and contingent expenses occur, which so frequently cause the actual cost of construction so much to exceed the estimated cost. The Newcastle and Carlisle railway, which has been already quoted for the economy of its construction, is remarkable for its sinuosities. There are several curves of about a quarter of a mile in radius, and in one part the line runs round the base of a hill, of very moderate diameter, at a less curve probably than other railway in the kingdom. Adopting these views, the Irish railway commissioners found that by a very inconsiderable loss of mechanical power, and without, in any respect, interfering with the working capabilities of their proposed lines, that is to say, without the introduction of any gradients exceeding the limit in their original sections (of sixteen feet to a mile), a saving of 31½ per cent. might be effected, or an amount of £1,674,000 on a line of 359 miles. The advantage of this reduction in the neighbourhood of towns may be deduced from the fact, that while the average saving per mile of the whole distance was estimated at £3,200, the saving at the entrance into Dublin was calculated at £18,200 per mile, viz:—

	Entrance into Dublin.	Average of the whole.
Original Gradients .	L.52,925	L.14,813
Reduced . . .	34,608	11,639

On the Belgian railway the gradients never exceed 1 in 250. From Louvain to Ans they average 1 in 333, which is the limit adopted above by the Irish commissioners.

5th. Another source of extravagant expenditure arises from the haste with which these works are frequently pushed forward; which is such, in many cases, as to require day and night work, and many other heavy extra charges.

6th. Short lines are frequently rendered expensive by their requiring a greater proportionate number of stations, warehouses, workshops, and other establishments; those always forming a large item in the general cost of construction.

7th. The nature of the country frequently presents difficulties only to be overcome by an enormous expenditure in the formation of tunnels, cuttings, embankments, bridges, &c.

The Irish railway commissioners pronounce a decided opinion, that unless expenses of this nature can be avoided in Ireland, there is but little prospect of a general railway system being attended in that country with either private or national advantage.

It will be observed that most of the causes which have enhanced the cost of railways in this country would be in a great measure avoided, or might be controlled by the government, if the undertaking were in their hands. But supposing that their influence was merely exerted to suppress the two first causes of expenditure—parliamentary costs, and excessive compensation to proprietors of lands and houses—and the removal of the other causes were left to private judgment, it will be seen that, notwithstanding the difference in the value of land and labour in this country, the expense of constructing a railway in England under ordinary circumstances, which already falls short of that incurred in France, would not much exceed that incurred in Belgium. In this country the cost may be taken at from £10,000 to £12,000 per mile, which has been the actual cost of two lines subject to the expenses already enumerated; in France at £15,000, and in Belgium at £8,500, in both of which countries the construction is in the hands of the government.

We have not the means of comparing the different branches of expenditure in this and foreign countries. Labour, which is the principal portion, is paid higher in England; but it may be doubted whether, as compared with France and Belgium, its superior productiveness will not to a considerable extent diminish this disadvantage. Land also must be much more expensive, particularly under the present system of purchase; but we lie under less disadvantage with respect to materials and mechanical processes.

The estimate of the total expense of the several lines projected by the Belgian government is as follows, according to the statement put forth in the "Livret du Chemin de fer de la Belgique," published by the Royal Geographical establishment in Brussels. The cost of a single line of rails in a level country is taken at £6,950 per mile, and in a hilly or broken country at £8,559, an increase of 23 per cent.

158 miles	completed, at L.6,950 per mile	L.1,097,280	L.1,786,200
81⅛ —	unfinished at L 8,559 —	688,920	
239⅛ —	by the law of 1st May, 1834.		
37⅛ —	level country, at L.6,950 per mile	L.259,200	738,000
56 —	of hilly country, at L.8,559 —	478,800	
93⅛ —	by the law of 26th May, 1837.		
332¼ miles	. . . . .		L.2,524,200
To this must be added the cost of engines and carriages, stations, workshops, and buildings, &c., about 14 per cent.	. . . .		355,800
		Total . .	L.2,880,000

This sum averages £8,660 per mile. The extent of the lines proposed by the Irish railway commissioners is remarkably approximate—359 miles. Their estimate, with the reduced gradients, is £3,643,353, averaging £10,150 per mile, or 17⅓ per cent. more than the Belgian lines.

The carriages on the latter are divided into four classes, the fares of which vary according to the degree of comfort which the conveyances possess. They present a great contrast, as regards amount, with the English fares. The average charge per post league of 4,000 metres, or 4,374 yards, is,—

In Berlins	35 c.;	equal to	14·08 c., or less than	1½d.	p. m.
Diligences	30	—	12·06 —	1¼d.	—
Chars-a-banc	20	—	8·04 or rather more than	¾d.	—
Waggons	10	—	4·02 or rather less than	½d.	—

There are also waggons for the transport of merchandise, but it is only since the commencement of 1838 that heavy goods have been conveyed by this means. Previous to that period not even the carriages of persons travelling by the railway could accompany them; it was necessary to forward them by the ordinary roads.

The following statements will show how far the Belgian surpass the English railroads in cheapness of fares. In the former country there are four classes of carriages, the cheapest of which is only two-sevenths, or less than one-third of the English, and only four-tenths of 1d. per mile. In England there are sometimes not more than two classes, the lowest of which bears a very different and a much higher proportion to the superior carriages. The Manchester and Liverpool railway affords a favourable opportunity of comparison, as the distance is about the same as that between Brussels and Antwerp; the former being about 30 miles, and the latter 27¼ miles. The fares are as follows:—

Liverpool and Manchester, 1837.	s.	d.	Brussels and Antwerp, 1838.	s.	d.
Mails	6	6	Berlines	2	11
Coaches	5	6	Diligences . . .	2	6
Waggons	4	0	Chars-a-banc . . .	1	8
			Waggons	1	0¼

On the English line, therefore, the lowest class is nearly two-thirds of the highest, and the rate per mile for the lowest class is equal to the rate of the highest on the Belgian lines, viz.—

Liverpool and Manchester.		Average of Belgian Lines.	
Mails . .	2½d. per mile.	Berlines .	1¼d. per. mile.
Coaches .	2¼d. —	Diligences .	1⅛d. —
Waggons .	1⅝d. —	Chars-a-banc	¾d. —
		Waggons .	½d. —

The following are the rates of fares on some other of the English lines:—

Table of Fares, and Rate thereof per Mile, on various Railways.

	Great Western: to Maidenhead, 22 Miles.			London and Birmingham: Whole Distance, 112½ Miles.			Southampton: to Hartley Row, 36 Miles.			Grand Junction: Whole Distance, 82½ Miles.			Newcastle and Carlisle: Whole Distance, 60 Miles.			Greenwich: to Deptford, 3 Miles.			Dublin and Kingstown, 6 Miles.		
	Fares.		Rate per Mile.	Fares.		Rate per Mile.	Fares.		Rate per Mile.	Fares.		Rate per Mile.	Fares.		Rate per Mile.	Fares.		Rate per Mile.	Fares.		Rate per Mile.
1st Class.	s.	d.	d.	s.	d.	d.	s.	d.	d.	s.	d.	d.	s.	d.	d.	s.	d.	d.	s.	d.	d.
Mail	6	6	3·54	32	6	3·48	..		..	25	0	3·63	11	0	2·20	..		..	..		..
Coach	5	6	3·	30	0	3·20	9	0	2.84	21	0	3·05	10	0	20·0	1	0	4·00	1	0	2·00
2d Class.																					
Close	4	0	2·18	..		..	..		..	..		..	8	6	1·70	0	6	2·00	0	8	1·33
Open	3	6	1·90	20	0	2·16	6	0	1·89	14	0	2·03	7	6	1·50	..		..	0	6	1·00

The above table shows that among the lines having one of their termini in London, the fares are highest on the Birmingham, and lowest on the Southampton, leaving out of consideration the Greenwich line, which, from its difference of length, cannot enter into the comparison. The charge, however, on the Newcastle and Carlisle line is from one-fifth to one-third less than any of the others. It proves also that no uniform principle has guided the directors of railway companies in determining the rates of fares. In general the charge by the second class, or open carriages, is about two-thirds of that by the first class carriages; but this is not the case on the Newcastle and Carlisle line, where the proportion amounts to three-fourths; nor on the Greenwich, on which line it is only one-half. The most striking [illegible] however, is, that the cost of construction appears to have no influence whatever upon the fares. There is no difference in this respect (at least as to the first class carriages) between the Dublin and Kingstown line, which cost £42,[illegible] a mile, and the Newcastle and Carlisle, which cost £[illegible] and a very slight difference between the Grand Junction, which cost less than £[illegible] a mile, and the London and Birmingham, which cost [illegible]. The fares also on the Greenwich are the same in amount as those on the Dublin railway ([illegible] lines), although the distance is only one-half as great: but they bear no proportion to the difference of cost, which was five times greater on the former line. If this element may thus be left out of consideration, on what grounds have the directors proceeded? Simply, it would appear, on that of fixing the highest rate which the public will consent to pay, or upon the principle maintained in the post-office, of determining what quantity of traffic will yield as much profit as they acquire at the rates which they choose to fix, and neglecting or resisting an equivalent increase at a lower rate, because they are unwilling to incur the risk of loss by finding more carriages and more extensive accommodation. It is not sufficient to assert that the fares are moderate, and the accommodation adequate to the present traffic. The experience of the railroad system itself, compared with turnpike roads, proves that as the fares are reduced, and the accommodation is extended, the traffic will more than proportionably increase. There can, indeed, be no doubt that if the present high rate of charge be maintained, the monopoly which railways possess will prove a great obstacle to increased travelling. That the directors have little to fear from adopting a system of low fares will appear from the following comparison of the present amount of travelling in England and Belgium.

The Liverpool and Manchester railroad offers a very favourable comparison for this country, as the intercourse between those two towns is perhaps greater than between any other two places at an equal distance. The number of passengers booked at the company's offices on that line since its opening has been as follows:—

In 1830 (from 16th September to [illegible] December	[illegible]
1831 (the whole year) . .	[illegible]
1832 — . .	[illegible]
1833 — .	[illegible]
1834 — .	[illegible]
1835 — . . .	[illegible]
1836 — . .	[illegible]

The population of the towns on the line, exclusive of the adjacent districts, which [illegible] inhabitants engaged in commerce and manufactures, was, in 1831, Liverpool, [illegible]; Manchester, 270,963; Warrington, 19,155;—total, [illegible]. This number could not have been less in [illegible] than 523,000, which is the number of passengers using the railroad in that year. On an average, [illegible] fore, each inhabitant may be supposed to take one trip in a year.

In Belgium the number of passengers booked at Brussels, Mechlin, and Antwerp, inclusive of two intermediate stations; in each year since the opening of these lines, has been as follows:—

	Brussels.	Mechlin.	Antwerp.	Total.
1835 (8 last months) .	215,342	206,097	—	421,439
1836 (Antwerp only 8 months)	379,588	265,048	226,671	871,307
1837	475,155	364,317	305,995	1,145,467
1838 (10 months) .	511,326	338,351	299,146	1,148,823

The population of these three towns did not, in 1838, amount to one-half of that on the English line, namely, Brussels, with its suburbs, 134,302; Mechlin, 22,895; Antwerp, 75,363;—total 232,960; and neither the population nor the commercial activity of the surrounding districts can be compared with those of its competitor, yet the intercourse in 1837 was more than twice as great, and with reference to the difference of population, was five times as great, the average number of trips to each inhabitant having been five per annum. A comparison with the intercourse on both lines previous to the formation of the railroads is equally favourable to the Belgian undertaking. On the Liverpool and Manchester line the average number of passengers which the coaches carried, in the year 1825, was estimated at 450 daily, or 164,250 per annum. The number actually conveyed by the railroad, in 1836, was 523,000, showing an increase of 218 per cent., or rather more than three times the former number; the fares having been reduced from 10s. and 6s. to 5s. 6d. and 4s.; the higher rates one-half, and the lower only one-third. On the Belgian line the number of passengers between Brussels and Antwerp, before the opening of the railway, is said to have been 80,000 yearly. The rates of conveyance have been reduced from 4s. and 2s. 6d. to 2s. 6d. and 1s. 0½d.; the higher fares two-fifths, and the lower three-fifths: and in 1837 the number of passengers booked at Brussels and Antwerp, excluding Mechlin, whence a portion of the passengers were proceeding on other lines of railway, was 781,250, showing an increase of 876 per cent., or about nine and a half times the former number. If Mechlin be included, the increase will be fourteen times the ormer number. An analysis of the classes of travellers will show that this superior activity is in a great measure owing to the cheapness of fares. Of the total number of passengers, during the six months ended 30th October, 1836, the proportion using each class of carriages was as follows:—

				Per Cent.			Per Cent.
Berlins,	paying	2s.	11d.	1·7	yielding	a revenue of	5
Diligences	—	2s.	6d.	3·7	—	—	9
hars-a-banc	—	1s.	8d.	22·2	—	—	32
Waggons	—	1s.	0½d.	72·4	—	—	54
				100·			100·

The proportion of persons travelling short disances only in waggons is still greater, but the above s sufficient to show how large a portion of the whole revenue of the company is derived from assengers of the lower class, paying a very small re; and it is a just inference that the high rates f fares on the Liverpool and other railroads in ngland do very materially check travelling; that o the artisan they entirely prohibit travelling for leasure; that they restrain even the wealthy in he use of this source of recreation; and it can carcely be doubted that they interfere with ourneying on business. Whether an increase of umbers at a low rate would repay the corresponding additional outlay for locomotive power, wear d tear, &c., is another question, upon which the vidence afforded by the Belgian railway, is also important. The following result of the operations on all the lines since they were severally opened, tends to show that the experiment has been successful.

					Expenses.	Receipts.	Excess of Receipts.
1835	1	Section open	8	months	L.6,748	L.10,756	L.4,008
1836	1	—	4	—	17,244	33,004	15,760
	2	—	8	—			
1837	3	—	6	—	46,216	56,676	10,460
	5	—	4	—			
1838	6	—	3	—	64,768	105,340	40,572
	8	—	4	—			
10 months.	10	—	3	—			

The cost of these ten sections, including the materials, was about £1,360,000, the interest of which sum, at 5 per cent. per annum, would amount to £68,000; and for ten months, to compare with the above, it would be £56,667. But it must be borne in mind, that the whole of the ten sections were only in operation during three months, and therefore the profits of 1838 must not be charged with the cost of all the sections. The receipts at Ans, which section was only open seven months, amounted to nearly one-third of those at Brussels during ten months, and the line from Bruges to Ostend was not open three months. The following were the receipts at each principal town:—

Brussels . .	L.29,882	Louvain . .	L.7,728
Antwerp . .	16,553	Tirlemont . .	4,218
Ghent . .	13,114	Ostend . . .	1,607
Mechlin . .	11,640	Other Towns . .	11,027
Ans	9,571		

This statement sufficiently indicates the favourable prospects of the undertaking.

With reference to the amount of profit which the Belgian government looks forward to receiving from the railways, it is necessary to state the view which they take of their position as proprietors. The undertaking might be prosecuted upon three different systems. 1st, As a work of public utility, without requiring that the receipts should cover the expenditure. 2nd, As a financial resource, and requiring that the receipts should exceed the expenditure, and yield an income for public purposes. 3rd, As an establishment which should neither be a burthen nor a source of revenue, and requiring merely that it should cover its own expenses, consisting of the charge for maintenance and repairs, with a further sum for the interest and gradual redemption of the invested capital. The Belgian government adopts the last system, and expects to realize an annual profit of 5 per cent. upon the original outlay beyond the current expenses. It has, however, been estimated, that the line from Brussels to Antwerp will yield 16 per cent.

The Belgian railways surpass those of this country, namely, in evenness of motion; but it remains to be seen how far the carriage of heavy goods, which was only commenced in 1838, will diminish this advantage. Mr Loch, in a letter addressed to lord Morpeth, and printed in the appendix to the Irish railway report, says upon this point, that "the motion is much more equal and uniform on the Brussels railway, and there is far less (I had almost said there is none) of that thumping which distinguishes the Greenwich, as well as the Liverpool railway. The carriages are neater within, and better finished; and they have none of that disagreeable swinging motion which the English carriage has, and which is so much remarked upon. Coupled with this, the breakage of the rail amounts to nothing on the Brussels railway, while it is so tremendous upon the Liverpool. Upon the former not above a dozen have been broken since it was opened (twenty months), whereas the number upon the Liverpool amounted to eighteen for the week ended 21st of January, 1837, and twelve for the week preceding. The velocities on each vary but little; the difference, however, is in favour of the Liverpool. The original rails on this road, and on the Brussels, are in weight nearly the same. The latter line has wooden sleepers throughout, and the road appears to have a certain degree of elasticity."

The velocity on the Belgian lines is, in general, from twenty-six to thirty miles an hour; which is diminished at the bridges, tunnels, stations, &c. These and the other necessary delays make the average rate twenty miles an hour.

The locomotive engines in use were manufactured by Mr Stephenson, at Newcastle, and Mr Cockerill, at Seraing: they are of different power, the diameter of their cylinders varying from eleven to fourteen inches. They have generally only two driving-wheels, but a few have four: twenty-eight carriages are fixed by law as the largest double train with two engines; from fourteen to eighteen as the number for a single engine.

There remains only to show the nature of the expenses of working the lines, divided into the principal branches. The total expenditure under this head, from the opening of the first line to the end of October, 1838, was £134,981, of which there was for—

Maintenance and Police of the Line	L.36,274 = 27	per cent.
Expenses of Carriage . . .	76,379 = 57	—
— Collection . . .	22,328 = 16	—
Total . .	L.134,981	

The accounts for the first ten months of 1838 enter more into detail, of which the following is an abridgement:—

Maintenance and Police:— . .	L.	
Wages of labour . . .	13,856	
Materials	604	
Salaries	652	
		15,112
Expenses of Carriage:—		
Wages of labour . .	12,700	
Salaries	1,317	
Labour at coke furnaces .	696	
Materials for consumption .	19,945	
— repairs, &c. . .	2,518	
		38,176
Expenses of Collection:—		
Wages; transport of baggage .	1,742	
Salaries of officers . .	8,145	
Miscellaneous	1,592	
		11,479
Total . .		L.64,767

Among the materials for consumption, coal, coke, and wood amounted to the large sum of £17,520.

RAMOOSSIES; one of the mixed castes of India, who live mainly by plunder. They reside chiefly in the outskirts of towns and villages, in a portion of the Mahratta country, extending 200 miles from north to south, and 100 from east to west. They are in number somewhat about 20,000. The bulk of this tribe appears, from time immemorial, to have led a led a roving life, residing as far as practicable from the more civilized inhabitants, and living by occasional robbery of such travellers as fell in their way, and by regular attacks on the houses in towns and villages near which their nocturnal marches carried them. The settled population found it advisable to purchase immunity from the assailants they were too feeble to oppose; and some of the tribe were willing to receive this sort of "black mail" as a price of protection from all robbers, as well of their own body as of any other. This practice originated the system of village watchmen, which in this part of India is entrusted to Ramoosy families, in whom the office has become hereditary.

But the greater part of the tribe live entirely by robbery; they have regularly organized bands, who are bound by strict rules, and joined together by oaths which they consider sacred. In robbing escorts or single travellers, they proceed much as the other predatory tribes in India, but when they attack houses, they have certain regulations which may be almost termed religious observances, from which they rarely depart. On approaching a village they carefully hide their shoes and the sheaths of their swords in the long grass, and then throw themselves into a supplicating posture, make repeated obeisances, and invoke the tutelary spirit of the place to favour their undertakings, and to crown their exertions with success, that they may obtain a valuable stock to maintain themselves and their wives and children for a long time. One of their party then takes off his turban, which is cut into three, five, or seven pieces, and moistened with ghee to serve as torches; a light is struck, the torches are kindled, and the village entered: the actual robbery is almost always effected by violence, and generally accompanied by the barbarities attending such scenes in India. If any of their party is killed, they are careful to remove the body to prevent discovery; or if they are hard pressed, cut off the head, and take it away with them; they are so apprehensive of discovery, that they will even cut off the head of any one who is so severely wounded as to be unable to make his escape, though not mortally. But they rarely come to this extremity: cunning is their usual weapon, and it is mostly successful. They are so very skilled in imitating the cries of the various wild animals which are so frequent in the neighbourhood of the native villages, that their occurrence excites no attention. When separated in flight, or divided for the purpose of a more effective attack, the whistling of birds and the howling of jackals form a sort of language of signals, by which their movements are known to each other, though unsuspected by those uninitiated. The cawing of crows is sometimes imitated very soon after midnight, to presage the approach of morning, in order to induce sleeping travellers to rise and march before the hour that prudence would dictate; and in a country where clocks are unknown, many a traveller has been led by such means to set out hours before the usual time, lured to a secure spot, and there plundered.

In these expeditions gain is the chief motive, and although violence is often practised, murder is rarely perpetrated; stories are told of their having suffered much from their unwillingness to imbrue their hands in blood. In former times they were less scrupulous, but even at the worst, they seldom murdered without the stimulus of revenge. In gratifying this passion, they resembled the Children of the Mist; it was disgraceful to forgive an injury, and a parent on his death-bed considered it a sacred duty to call together his children, to remind them of any insult which [illegible] [illegible] for, and to enjoin them not to let slip the first opportunity of vengeance. Their character [illegible] less dark, and they may be considered simply as bold reckless adventurers; their outrages are perpetrated with every precaution that prudence could [illegible] but an inconceivable heedlessness [illegible] [illegible] neglect of the most ordinary care in [illegible]

ble in their actions, and leads to the detection of their robberies. The most usual way in which they are found out, is their making a foolish display of their stolen goods, or offering them for sale in some shop, generally in Poona, the very place where in all probability the article was originally purchased.

READING; a town of England, in Berkshire, thirty-nine miles west from London, and sixteen from Windsor. It is situated on the banks of the river Kennet near its confluence with the Thames; and on the line of the great western road from London to Bath. Its origin and the derivation of its name are uncertain, but the former may with probability be ascribed to the Saxons, as it is not noticed in history till after the middle of the ninth century, when, according to Asser, the historian of Alfred the Great, Reading was taken by the Danes. The town has received successive charters from the reign of Henry III. to that of Charles I., the latter having been modified by George IV. The whole, however, was abrogated by the municipal reform act of 1835, which vested the government in a mayor, six aldermen, and eighteen councillors. Among the public buildings of the place are the three parish churches, St Lawrence, St Mary, and St Giles, all vicarages, besides various dissenting chapels, the town-hall, originally part of the hospital of St John, rebuilt in 1785, and the county jail, erected about the year 1793.

The town is of a triangular form, consisting of four principal streets, intersected by others of less importance. Some of the houses are partly constructed of timber-work, with high gables, in the style of the sixteenth century; but the buildings in general are of brick, and are spacious and convenient. The town is well paved; it is lighted with gas, by a joint stock company, established by act of parliament in 1825; and there is an ample supply of water, furnished by a company established in 1694. There is a handsome stone bridge of one arch, over the main stream of the Kennet, in Duke street; north-east of the town is a bridge, called Blake's bridge; and there are others over branches of the river. A small theatre is usually opened annually, for a month or six weeks. Reading abounds in charitable and educational institutions. Among them may be noticed the benefaction of Mr John Kendrick, an eminent clothier of Reading, who, in 1624, gave £7500 in trust to the mayor and burgesses, for the erection of a house for the employment of the poor, which purpose was carried into effect at the expense of £2000; and in this establishment, which, for some unknown reason, received the singular appellation of the Oracle, the woollen manufacture was for some time prosecuted with considerable success. On the 27th May, 1839, the new royal Berkshire Hospital was opened at Reading. To this institution, Mr Benyon de Beauvoir contributed the munificent sum of £4000; —£3000 towards its erection, and £1000 to the hospital. The structure is in the Grecian style, from a design of Mr Bryant.

Reading sends two members to parliament and is a polling town for the county elections. The trade of the town is more of a general nature than a marked character, and the manufactures are unimportant since the decay of the clothing trade. The interchange of various commodities between this town and London, Bath, Bristol, &c.. (facilitated by water conveyance and by the Great Western railway), with its large markets, fairs, and an excellent local trade, are the chief sources of its prosperity, the latter being benefitted most materially by the many wealthy and titled individuals who have seats or residences in the neighbourhood. The principal articles manufactured are a few silk goods, ribbons, pins, sackings, &c.; there are also some boat-building yards, and it enjoys a good trade in timber, corn and malt. William of Reading, archbishop of Bordeaux in the reign of Henry III., and archbishop Laud, were natives of this place. Population in 1831, 15,595.

REGISTRATION OF BIRTHS, MARRIAGES, AND DEATHS. The keeping of parish registers, as a national measure in England, dates from 1538. They were first enjoined to be kept, on the dissolution of the monasteries. The 12th article of Cromwell's injunctions to the clergy in 1538 directs that every clergyman shall, for every church, keep a book, wherein he shall register every marriage, christening, and burial; and the injunction directs the manner and time of making the entries in the register book weekly—any neglect being made penal. This measure created great excitement. It was surmised that the registry was preliminary to a new levy of taxes.

In the first year of Edward VI. (1547,) all episcopal authority was suspended for a time, while the ecclesiastical visitors then appointed went through the several dioceses to enforce different injunctions, and, among others, that respecting the keeping of parish registers, issued by Cromwell nine years previous. The injunction was again repeated in the beginning of the reign of Elizabeth, who also appointed a protestation to be made by the clergy, in which, among other things, they promised to keep the register book in a proper manner. One of the canons of the convocation of Canterbury in 1603 (which were confirmed by James I., but never received the sanction of Parliament) prescribes minutely in what manner entries were to be made in the parish registers. "This canon," says Mr Rickman, "also contains a retrospective clause, appointing that the ancient registers, so far as they could be procured, but especially since the beginning of the reign of Elizabeth, should be copied into a parchment book, to be provided by every parish. This wise regulation appears to have been carried into full effect at the time; so that the ancient parish registers now extant usually commence with that queen's reign, and some of them earlier, quite as far back as the date of the original injunction. That part of the canon which directs the register book to be kept in a coffer in the church has not been enforced, as it was found by experience that the book was liable to be damaged by the moisture prevalent in uninhabited buildings, and also to be purloined with the other contents of the church coffer. The register book was heretofore usually kept in custody of the officiating minister, at his own house, if resident on the benefice, otherwise in that of the parish clerk."

An act was passed in 1694, having for its object a general registration of births, marriages, and deaths, but the motive which prompted it was not a consideration of the public and private advantages of the measure; it was regarded solely as a matter of revenue. It is the 6 and 7 Will. III. c. 6, and is entitled "An Act for granting to his Majesty certain Rates and Duties upon Marriages, Births, and Burials, and upon Bachelors and Widowers, for the term of five years, *for carrying on* *the war against France with vigour.*" It is a very long Act; and the amount of duty to be paid on births, marriages, and burials, according to rank or condition, is minutely set down. All persons in holy orders were directed, under a penalty of £100, to keep a register of marriages, christenings, and burials, to which the collectors of the rate were to have free access without fee. Parents were bound to give notice to the collectors within five days after the birth of a child, under a penalty of 40s. A supplementary Act was passed, (the 9th Will. III. c. 32,) entitled, "An Act for preventing Frauds and Abuses in the charging, collecting, and paying the duties upon Marriages, Births, Burials, Bachelors, and Widowers."

Considerable excitement prevailed in 1753, respecting a Registration Bill which had been introduced into the House of Commons. In the beginning of that year, Mr Thomas Potter, son of Dr Potter, archbishop of Canterbury, brought in a Bill "For taking and registering an annual account of the total number of Marriages, Births, and Deaths; and also of the total number of poor receiving alms from every parish and extra parochial place in Great Britain." It passed the Commons, but was rejected by the Lords." During its passage through the lower House, it was most strenuously opposed by a Mr William Thornton, who declared himself utterly astonished that any individual of the human species should be so presumptuous and abandoned as to make such a proposition. His argument (which he held up in various forms, until the minority that voted with him increased on each reading from 2 to 17, and 57) was that "an annual register of our people will acquaint our enemies abroad with our weakness, and a return of the poor rate our enemies at home with our wealth."

The 52 Geo. III. c. 146, made some alteration of the law respecting parish registers. This Act was entitled, "An Act for the better regulating and preserving Parish and other Registers of Births, Baptisms, Marriages, and Burials in England. It received the Royal Assent on the 28th of July, 1812. It directed that the registers of parishes, and of chapelries, (where the ceremonies of baptism, marriage, and burial were performed,) should be kept in books of parchment, or of good and durable paper, on which should be printed the heads of information required to be entered; and that the register books should be kept in a dry, well painted iron chest, in the residence of the officiating minister, or in the parish church or chapel. Copies on parchment of all registers were also to be sent annually to the registrar of each diocese. The title of this Act is recited in the preamble of the new Registration Act, and so much of it as relates to the registration of marriages is repealed.

"No person will be surprised," says Mr Rickman, "that one half of the registers anterior to A.D. 1600 should have disappeared. If any other nation possesses similar registers of that date, (a valuable proof of uninterrupted civilization,) a comparison might be instituted, and the preservation of such records through three hundred years would not prove to have been of frequent occurrence; but in point of fact, examination shows that 812 English Parish Registers commence in the year 1538, about 40 of which contain entries (copied probably from family Bibles and tombstones) anterior to the date of Cromwell's injunction; 1,822 Parish Registers commence from A.D. 1558 to 1603, when the canons authorised by king James directed a copy of all parish registers to be made and preserved; and nearly one half of them (5,082) have been preserved accordingly, and are now extant. Parish registers, to the number of 969, commence between that time and the year 1650;—2,757 from A.D. 1650 to 1700;—[illegible] Parish Registers from A.D. 1700 to the year 1750; the rest (six or seven hundred), since that time."

The law relative to the solemnization of marriage in England, previous to 1754, was in a very undefined state. The following brief sketch was given by Dr Lushington in the House of Commons, March 17, 1835:—"By the ancient law of the country as to marriages, a marriage was good, if celebrated in the presence of two witnesses—though without the intervention of a priest. But then came the decision of the Council of Trent, rendering the solemnization by a priest necessary. At the Reformation we refused to accept the provisions of the Council of Trent, and in consequence the question was reduced to this state—that a marriage by civil contract was valid; but there was this extraordinary anomaly in the law, that the practice of some of our civil courts required in certain instances, and for some purposes, that the marriage should be celebrated in a particular form. It turned out that a marriage by civil contract was valid for some purposes, while for others—such as the descent of real property to the heirs of the marriage—it was invalid. Thus, a man, in the presence of witnesses, accepting a woman for his wife, *per verba di presenti*, the marriage was valid, as I have said, for some purposes; but for others, to make it valid, it was necessary that it should be solemnized *in facie ecclesiæ*. This was the state of the law till the passing of the Marriage Act in 1754."

It may be added, that a common notion prevailed, that the solemnization of a marriage by a person in holy orders rendered it sacred and indissoluble. This belief was one cause of the Fleet and other marriages in London, to suppress the scandals and indecencies of which the Act of lord chancellor Hardwicke was passed in 1753. But this Act, in abolishing all clandestine and irregular marriages, compelled all persons, except Jews and Quakers, to be married according to the ritual of the Church of England—so that, in curing one evil, it created another, by laying a restraint on those who differed from the Established Church, which has only been remedied by the law passed during a late session of Parliament.

The authority of the archbishop of Canterbury to grant special licences is derived from the 25 Henry VIII. c. 21, entitled, "An Acte for the exoneration from exactions payde to the See of Rome." Henry, in furtherance of his quarrel with the pope, caused an Act to be passed (32 Henry VIII. c. 38,) by which he declares "all persons to be lawful that be not prohibited by God's law to marry," and that "no reservation or prohibition, God's law except, shall trouble or impeach any marriage within the Levitical degrees."

During the commonwealth, a great number of marriages were solemnized by justices of the peace. Doubts having been raised about their validity, an Act was passed, the 12 Charles II. c. 33, entitled "An Act for Confirmation of Marriages," by which all such marriages solemnized from the 1st May 1642, were confirmed.

There were a number of chapels in privileged places in London, claiming exemption from episcopal visitation, where marriages were celebrated in defiance of the canon law, without publication of banns. Of these, the chapel in the Fleet prison acquired the most infamous notoriety. At first marriages were really performed in the chapel itself, but as business increased, persons in holy orders confined for debt endeavoured to earn a subsistence by marrying, and it was found convenient to have other places within the rules of the prison, until at last the various tavern-keepers in the neighbourhood fitted up rooms in their houses as chapels, some of them kept parsons on their establishment at a weekly salary, and all of them had individuals plying about to decoy or entrap people to their chapel-shops. Various ineffectual attempts were made to put a stop to the evil. In the Registration Act already mentioned, 6 and 7 Will. III. c. 6, a clause is introduced, declaring that "No person shall be married at any place pretending to be exempt from the visitation of the bishop of the diocese without a licence first had and obtained, except the banns shall be published and certified according to law," and any parson, vicar, or curate celebrating such a forbidden marriage, was made liable to a penalty of £100. Again, in the 10th Anne, c. 18, which is a well-known Act, laying duties on paper, soap, linen, &c. a clause was introduced (numbered 192) which declares that "whereas great loss hath happened of the duties already laid upon stamped vellum, parchment, and paper, *and other inconveniences daily grow from clandestine marriages*, for remedy thereof for the future, be it enacted that every parson, vicar, or curate, or other person in holy orders, beneficed or not beneficed, who shall, after the 24th of June 1712, marry any person in any church or chapel exempt or not exempt, or in any other place whatsoever, without publication of the banns of matrimony," &c. were to forfeit £100, and a similar penalty was made applicable to gaolers and keepers of prisons for permitting, or conniving at, clandestine marriages.

But these prohibitions were framed more with view to the revenue than to the morality of the ase, and the celebrators of illegal marriages proably thought that they had as much right to their ncome as the government. The evil increased apidly, for the law was completely evaded and set t nought. There was a chapel in the parish of *Hampstead*, called Sion Chapel, which belonged to he keeper of an adjoining tavern, who, by his dvertisements, invited the public out to his establishment, where parties could be married, and fterwards spend the day agreeably in his grounds. There was also a chapel, called after the name of he minister, Keith Chapel, at which an extraornary number of marriages were celebrated. This as a somewhat more respectable place than the eet. But marriages at the Fleet became an ormous nuisance. An appeal case before the ords respecting the validity of a marriage was e immediate cause of the introduction of lord ancellor Hardwicke's bill in 1753, which connued in full force until the new law came into eration on the 1st March 1837.

Lord Hardwicke's bill is the 26 Geo. II. c. 53, An Act for the better preventing Clandestine arriages." By it all marriages celebrated witht licence or publication of banns were declared be null and void, and the celebrators guilty of felony. It also requires that a marriage, in order to be valid, should be solemnized in a church or chapel where banns had been *theretofore* usually published. Notwithstanding the evident mischiefs it was intended to cure, the bill was very unpopular, and met with fierce opposition. The hon. Henry Fox, afterwards lord Holland, (who had himself been married at the Fleet in 1744,) and Charles Townshend were the leading opponents of the measure. Blackstone calls it an "innovation upon our ancient laws and constitution." The provisions of the law took effect from the 25th of March, 1754, and Burn tells us, that so eager were all parties to be beforehand with the law, that it appears from one register-book alone, that on that day no less than 217 marriages were celebrated at the Fleet—"which," he adds, "were the last of the Fleet weddings." An attempt was made to claim privilege for a chapel in the Savoy, but the conviction and transportation of minister and curate put an end to the practice of celebrating illegal marriages.

The clause in lord Hardwicke's Act, requiring banns to be published in some church or chapel where they had theretofore usually been, having been strictly interpreted, went to exclude churches consecrated after the passing of the act. This was remedied; but with this exception, the measure remained in full force till the new act came into operation on the 1st of July, 1837.

Government, much to its credit, bought a quantity of Fleet Marriage Registers a few years ago, and deposited them in the office of the Consistory Court of London. They date from 1686 to 1754. Along with the registers are a number of small pocket-books which were used by the Fleet parsons when they went to the different public-houses, and from which they used to enter the marriages into the larger books. But the pocket-books contain entries not to be found in the registers, such as marriages which were desired to be kept secret, &c. Considerable difference of opinion prevailed as to whether the Fleet Registers could be received as evidence in a court of law—but the more prevalent opinion was, that they might be received as declarations, requiring the assistance of other evidence.

It is unnecessary to give any account of the different attempts which have been made, especially since 1824, to procure an alteration of the marriage law. The delay may be regarded as fortunate, as the law has now been altered, in conjunction with a general scheme of registration. Whatever defects may be chargeable on the details of the two measures, (which, though developed in two Acts, are treated as, and legally affirmed to be, one,) they constitute the first national effort in England to extend to all classes, and to every kind of opinion, an unfettered participation in the securities of social life. The member of the Established Church may be married as heretofore, if he chooses; the Dissenter may be married with or without religious rites, as he pleases; and both marriages are equally valid in the eye of the law. The machinery for registering Dissenting places of worship, for the purpose of solemnizing marriages, is sufficiently free and unrestricted, consistently with a due provision for guarding against the evils which were put an end to by lord Hardwicke's Act, while it removes the obligations which were felt as infringements upon the rights of conscience which that Act perpetuated. And with all objections to the law in some details, it is a great matter to have obtained the *principle* in so clear and broad a manner. Certain rules there must be, if the state is to be expected to protect both itself and individuals, and to secure to them, without trenching either on scruples of conscience or of feeling, all the solid advantages of a well-defined marriage law. While, therefore, the Dissenter has been relieved in a way which leaves him but little to complain of in this particular affair, the Churchman has nothing whatever on which to ground an objection against it. For *he* may be married in the old way, by licence or by banns, as if the law had never been altered.

Important and obvious as are the applications of the registered facts, the measure had to encounter considerable opposition. Its advantages were scarcely perceived at first by the multitude; and some of the clergy of the Established Church threw obstacles in its way, under an erroneous apprehension that the registration of births might interfere with the administration of baptisms. By taking active steps to make known in every way the nature, advantages, and obligations of the Act, and by a firm, but conciliatory conduct, the Registrar-General succeeded beyond the most sanguine expectations, in obtaining, during the first year of its operation, an almost complete register of deaths and marriages. The register of births is less complete; but this owing to the want of a clause in the act to render the information of births imperative. The country is divided into 618 districts, over each of which is appointed a Superintendent-Registrar, and which are generally coincident with the poor law unions. In the latter end of 1838 there were 2,193 Registrars employed. Certified copies are transmitted to the General Register Office quarterly: they are collected by the Superintendent-Registrars from more than 14,000 persons charged with the duty of compiling them. More than 80,000 separate papers, containing 847,149 entries, have been thus transmitted, of which 739,737, (being all the entries of births and deaths, and such marriages as are registered by the Registrar of Marriages) have been compared with the original by the Superintendent-Registrar, and certified to be correct. The certified copies are examined, arranged, and indexed at the General Register Office, and there the abstracts are made which are contained in the Annual Report.

In the year ending June 30th, 1838, it appears that 111,481 marriages were registered; 107,201 according to the rites of the Established Church, namely, 9 by special license, 13,677 by license, 68,410 by bans, and 493 by a certificate from a Superintendent-Registrar; while in 24,612 instances it was not stated in which of the foregoing forms the marriage was performed: 4,280 marriages took place *not* according to the rites of the Established Church, namely, 2,976 in registered places of worship, 1,093 in the offices of Superintendent-Registrars, 76 between Quakers, and 135 between Jews. In the first quarter 24,030 marriages were registered, in the second 34,449, in the third 23,201, in the fourth 29,801. The mean of the three last quarters was 29,150; and this would make the annual number 116,600, while, according to former estimates, the number should have been 116,000.

399,712 births were registered—204,863 of males, 194,849 of females. The numbers registered in the first quarter amounted to 74,588, in the second to 89,528, in the third to [illegible] ; in the fourth 121,781. The registration of births "has, since the commencement, made a considerable and progressive advance; and during the [illegible] quarter of the first year attained a [illegible] in point of numbers over the average [illegible] of baptisms," which, it is estimated by the Registrar-General, would have amounted to [illegible] quarterly in 1837-8. It is, on every account, greatly to be desired that the registration of births should be rendered complete; but this appears [illegible] attainable, unless the Act of Registration shall be made compulsory.

The deaths registered in the year amounted to 335,956, to which must be added [illegible] deaths which occurred in the first year, and were registered in the first quarter of the second. This would make 338,660 deaths in the year, while according to former proportions, the probable number of burials entered in the parochial registers during the same period would be [illegible]. Mr Finlayson, in a communication addressed to the Registrar-General, estimated the total deaths at home, in the year ending June 30th, [illegible], at 335,968.

The following is an abstract of two tables shewing the number of registered deaths of males and females at each age, and the relative proportion out of a thousand deaths dying at each period.

Similar tables are given for each of 25 divisions of the country, which have been made with reference, as far as possible, to the natural character of the several districts, and the employments of the population.

AGES.	Total Number of Deaths.			[illegible]		
	Male.	Female.	Total.	[illegible]	[illegible]	[illegible]
Under 1 year*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 & 2 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3 .. 4 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
From 5 to 9 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 .. 14 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15 .. 19 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20 .. 24 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25 .. 29 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30 .. 34 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35 .. 39 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40 .. 44 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45 .. 49 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50 .. 54 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
55 .. 59 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
60 .. 64 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
65 .. 69 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70 .. 74 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
75 .. 79 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80 .. 84 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
85 .. 89 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
90 and upw.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Unknown . .	347	[illegible]	[illegible]			—
Total . .	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* [illegible]

From a very able report by Mr Farr upon the causes of death, it appears that, in the half year ending 31st December, 1837, the causes of death were assigned in 141,607 instances. The [illegible] deaths of males and females from each [illegible] are given for England and Wales, and for each of 25 divisions of the country, and the [illegible] [illegible] by each of 91 causes of death has been [illegible] from the facts registered. The proportion of deaths in 100,000 caused by each class of disease in each division has also been calculated.

The following is an abstract of this [illegible], the diseases being grouped together in a [illegible] according to their character:—

Classes of Diseases.	Total Number of Deaths distinguished.			Per-Centage Proportion of Deaths.		
	Male.	Female.	Total.	Male.	Female.	Total.
Epidemic, Endemic and Contagious	16,190	16,347	32,537	22·662	23·297	22·977
Sporadic, viz.—						
Nervous system .	11 729	10,123	21,852	16·418	14·427	15·431
Respiratory organs	18,925	19,597	38,522	26·490	27·929	27·203
Organs of circulation	902	694	1,596	1·263	·989	1·127
Digestive organs .	5,115	4,735	9,850	7·160	6·748	6·956
Urinary organs .	683	133	816	·956	·190	·576
Organs of generation	13	1,485	1,498	·018	2·117	1·058
Organs of locomotion	505	424	929	·707	·604	·656
Integumentary system	158	106	264	·221	·153	·187
Of uncertain seat .	7,942	8,265	16,207	11·117	11·779	11·445
Old age	5,674	7,017	12,691	7·942	10·000	8·962
Violent deaths . .	3,605	1,240	4,845	5 046	1·767	3·423
Total . . .	71,441	70,166	141,607	100·	100·	100·

The per-centage proportion of deaths by small pox, typhus, and phthisis, was as follows:—

	Males.	Females.	Total.
Small-pox,	4·262	3 935	4·104
Typhus,	6·213	6·567	6 389
Phthisis,	18·152	21·073	19·599

With respect to the principal diseases in the first class, it appears that 2,520 persons died of scarlatina, 3,044 of hooping-cough, 4,732 of measles, and 5,811 of small pox. The ages of 1,056 persons who died of small pox are enumerated, and the number under 5 years of age was 887. It is probable, therefore, that the majority of the 5,811 had never been vaccinated, and that about 12,000 die annually by small pox through the neglect of the parents.

The diseases of towns and of the open country are shown to differ very considerably both in character and intensity. The following is an abstract of two comparative tables of the diseases in cities and in counties.

The first comparison is between the 32 metropolitan unions and the five counties of Cornwall, Devon, Dorset, Somerset, and Wilts. The population of the former, according to the census of 1831, was 1,594,890, and of the latter 1,599,024. The rate of increase of the former, during the decennial period from 1821 to 1831, was 20 per cent.; that of the latter 12 per cent.: according to which, supposing the rate to remain constant, the population of the metropolis, on 1st October, 1837, would iave been 1,790,451, and that of the counties 1,723,770. The area of the former is 70 square niles, and there are, therefore, 25,578 inhabitants o each square mile; while the area of the latter is 7,933 square miles, and the population 222 to each.

The second comparison is between the districts of Aston, Bath, Birmingham, Bristol, Cambridge, Carlisle, Clifton, Derby, Dudley, Exeter, Leeds, Leicester, Liverpool, Manchester, Maidstone, Newcastle-on-Tyne, Northampton, Nottingham, Salford, Sheffield, Stoke-on-Trent, Sunderland, Wolverhampton, and West Derby, embracing all he principal towns in the kingdom, and the counties of Essex, Gloucester (exclusive of Bristol and Clifton), Hereford, Norfolk (exclusive of Norwich,) Suffolk, Sussex, and Westmoreland. The population of the former, in 1831, was 1,484,402, of he latter, 1,656,455. The rate of increase in the ities, from 1821 to 1831, was 31 per cent.; in the ounties 11 per cent. Hence the population on the st October, 1837, might be estimated at 1,762,710 the former, and 1,776,980 in the latter. The area f the cities was 677 square miles, with a population of 2,603 to each; and the area of the counties ,312 square miles, with a population of 190 to ach square mile.

Classes of Diseases.	First Comparison.		Second Comparison.	
	Metropolis.	Counties.	Cities.	Counties.
Epidemic, Endemic, and Contagious . . .	6,562	3,695	6,204	2,358
Sporadic, viz.—				
Of the Nervous system .	4,147	1,779	3,558	1,828
,, Respiratory organs	6,559	3,843	6,060	4,004
,, Organs of circulation	356	146	234	163
,, Digestive organs .	1,669	940	1,787	692
,, Urinary organs . .	111	75	108	86
,, Organs of generation	252	137	206	128
,, Organs of locomotion	150	71	112	83
,, Integumentary system	27	27	35	28
Of uncertain seat . . .	2,483	1,863	1,914	1,847
Old age	1,690	1,453	1,234	1,649
Violent deaths	580	324	790	405
Not specified	354	647	750	1,010
Total . . .	24,959	15,290	22,994	14,473

From these two tables it appears that the excess of mortality in the metropolis, compared with the five southern counties of England, is 64 per cent., or, in other words, that for every 100 persons who died in those counties, 164 died in the metropolis. The comparison of the other towns and counties is rather more favourable for the former, the proportion being as 100 to 158.

Among the diversities which especially demand attention, and by which there is least danger of being led to false conclusions, are those which relate to longevity, showing the varying proportions of deaths in old age in different portions of the kingdom. From a few instances of longevity no inference can be safely drawn; but the fact that of the deaths in any district, a comparatively large portion is above the age of 70, is a strong presumption in favour of the healthiness of that district. These proportions are found to vary greatly. In the whole of England and Wales, out of 1000 deaths, 145 have been at the age of 70 and upwards; while in the North Riding and northern part of the West Riding of Yorkshire, and in Durham, excluding the mining districts, the proportion has been as high as 210. In Northumberland, excluding the mining district, Cumberland, Westmoreland, and the north of Lancashire, the proportion has been 198; in Norfolk and Suffolk 196. in Devonshire 192, and in Cornwall 188. In contrast with this evidence of the large proportion of persons who attain to old age in these more thinly peopled portions of the kingdom, we find results extremely different where the population is densely congregated. In the metropolis and its suburbs the proportion who have died at 70 and upwards has been only 104; and even this proportion is favourable when compared with that of other large towns; the proportion in Birmingham being 81, in Leeds, 79, and in Liverpool and Manchester only about 63. A comparison of the mining parts of Staffordshire and Shropshire, and of Northumberland and Durham, with the rural districts surrounding each, exhibits great differences in this respect, the former averaging 109, and the latter 176. A very marked diversity also appears in the proportion of deaths of infants in different parts of the country. In the mining parts of Staffordshire and Shropshire, in Leeds and its suburbs, and in the counties of Cambridge and Huntingdon, and the lowest parts of Lincolnshire, the deaths of infants under one year have been more than 270 out of 1000 deaths at all ages; while in the northern counties of England, in Wiltshire, Dorset and Devon, in Herefordshire and Monmouthshire, and in Wales, the deaths at that age, out of 1000 of all ages have scarcely exceeded 180.

RELIEF CHURCH; a body of Scottish dissenters, ranking, as to numerical strength, next to the United Secession, and therefore standing second in the list of those dissenters who have withdrawn from the Church of Scotland.

Under the domination of a party who have not now the ascendant in the Scottish church, the General Assembly of 1752 appointed the presbytery of Dunfermline to meet at Inverkeithing, during the very time of the Assembly's sitting, to carry through a violent settlement in that parish. Every member of presbytery was enjoined, under pain of censure, to attend, and to appear before the Assembly on the day succeeding that of the appointed settlement, to give an account of their diligence, or to answer for their disobedience. The greater part of the presbytery did not attend, and thus the settlement did not proceed. The Assembly next day called the presbytery to account, and Mr Thomas Gillespie of Carnock, who was all along opposed to the settlement of ministers in reclaiming parishes, was deposed from the office of the ministry, while four of his co-presbyters were provisionally suspended. Upon this, Mr Gillespie proceeded to form at Dunfermline the first Relief congregation. A few years later, Mr Thomas Boston, son of the author of the 'Fourfold State,' voluntarily left his charge of the parish of Oxnam, and in the year 1757 erected a church in Jedburgh. These two ministers, along with Mr Collier, who afterwards deserted the Relief Church, formed themselves, a few years afterwards, into a presbytery. They called themselves the *Presbytery of Relief*, to intimate that they were willing to *relieve* from that which the great body of the Scottish nation have all along named the *yoke of patronage*. But this relief they professed themselves able to give only to those "who adhered to the constitution of the Church of Scotland, as exhibited in her creeds, canons, confessions, and forms of worship."

Since the constitution of the presbytery of Relief, this portion of Scottish dissenters has steadily continued to increase. For a considerable time, they occupied towards the Church of Scotland a position nearly analogous to that of the Wesleyan Methodists in England to the established church there. They professed no difference of opinion from the Scottish church, and cultivated intercommunion, so far as that was found practicable. But they have been lately withdrawing themselves to a greater distance from the church from which they originally sprung, and instead of having their candidates for the ministry educated at the Divinity Halls of the Universities, they have now a Hall of their own. They, however, require of their students the same attendance at all the classes in the university (theological ones excepted) which is required of candidates in the church of Scotland. In 1830, there were seventy-nine ministers connected with the Relief Synod, and in 1839, there were 112. The Relief is the only body of dissentients from the church of Scotland from which no branch dissent has sprung. As a church it still remains unbroken, but at the present time there is a union between it and the Secession church under proposition.

RENNIE, George; a distinguished agriculturist, was born at the farm of Phantassie, in the county of East Lothian, in 1749. His father, James Rennie, was one of the most active promoters of agricultural improvements in his day, and his brother John Rennie, was the celebrated civil engineer, of whom a short notice is given in the body of the work.

George Rennie very early exhibited indications of that activity, penetration, and intelligence, which characterized his after years. He has recorded of himself, that, while attending school, he used daily to pass through the workshop of Andrew Meikle, whose son was his companion, scrutinizing the machines and models from time to time passing under the hands of that indefatigable and ingenious man. He had an observant eye and a retentive memory, and in this way he gained some mechanical knowledge, and, what was of more advantage, an impetus was given to inquiry, and a turn for the investigation of such new inventions or improvements in the arts as came, from time to time, afterwards to be objects of public consideration and importance. When a youth, he was sent to Teviotdale by his father, to make a survey of the state of agriculture in those districts, and his attention was there powerfully directed to the commencement of a system of extensive improvement of their own estates by several gentlemen, the fathers of agricultural improvement in the south-east border counties,—such were lord Kaimes, Hume of Ninewells, Renton of Lammerton, Fordyce of Ayton, and others. These improvements, which consisted principally of enclosing, marling on a great scale, and draining, appear to have commenced so far back as 1750. James Rennie having died in 1766, when, consequently, the subject of our memoir was only seventeen years of age, this journey must have been undertaken anterior to that period, and proves, not only his general powers of observation, but his father's discernment, in having appreciated the qualities for which his son was afterwards to be distinguished. James Rennie having erected a brewing establishment on the ground now occupied by the Linton distillery, the superintendence of it was, in 1765, committed to George. In this duty he continued for one year, at which time the death of his father occurring, the establishment was relinquished, and allowed to remain in a dormant state until the year 1770, when it was let to a tenant. In 1783 Mr Rennie again took the work into his own management; and, having fitted it up in a superior manner, commenced the business of distilling on an enlarged scale. The distillery remained in Mr Rennie's hands until [illegible], when the whole work was let in lease.

The success of Mr Rennie as an agriculturist soon came to be very generally known, and the accurate arrangements of his farm were a theme of praise, as well as an incentive to emulation, among the most discerning of his neighbours. Considering agriculture as fundamentally a practical science, facts and actual experiments were the data on which he went, sparing neither trouble nor expense in setting to rest a variety of speculations. His keen perception and scrutinizing judgment taught him, almost intuitively, the fallacy of a number of these; and others, which had good sound grounds for their support, but which had been rendered by time and error too abstruse or complicated, he freed from the needless leaven encumbering their operation, and thus simplified and established. Above all, he taught, by the admirable way in which his lands were laid out and kept, that farming requires the quick eye and the controlling hand, and that its general principles, though subject to the operation of soil and climate, are regulated by intelligence and calculation. His property was completely fenced, thoroughly drained, well manured, and most perfectly cleaned of every kind of annual weed. This was effected by drilled crops, which were horse-hoed, hand-hoed, and thereafter, if necessary, hand-picked. In short, his whole operations were conducted in such a masterly style, and the culture of his farm in every respect so perfect, that it was not only vastly increased in productive value, but had the appearance of a well kept garden.

At the earlier periods of Mr Rennie's life, the custom of dividing farm grounds into the distinction of "infield" and "outfield," had not become entirely obsolete,—the former being the only portion which was manured, and which, from being constantly under tillage, was full of all sorts of weeds, annual and perennial; and the latter never receiving manure at all, except what it casually obtained in the depasturing of cattle, and consequently, scarcely repaying the trouble and expense of cultivation. In these times, also, a great part of East Lothian was held by the tenants under old leases, some of whom paid rent wholly in grain, and others partly in grain and partly in money, and nearly all were burthened with restrictions of thirlage to particular mills, and payments in kind. Farms were only beginning to be extended in size to the more modern scale, and the average might be about two hundred acres, although many were smaller, and few reached the length of three hundred. These required from three to four ploughs, which were each worked by four horses. At the present time, many of the farms exceed five hundred acres in extent, and are worked by eight or ten ploughs; and the natural consequence of such enlargements has been a diminution of the number of farmers by more than one-fourth. According to lord Kaimes, in his Gentleman Farmer, the usual rotation of crops at that time, upon the best infield land, was fallow, wheat, barley, oats, peas, wheat, barley, oats; while, upon inferior soils, a less scourging succession was practised. The method adopted in gathering in the harvest was also imperfect. From the reapers being hired for the season at fixed wages, it became their object, as they supposed it their interest, to hurry through matters, without much regard to the accuracy of their operations; the consequence of which was, that the grain was most imperfectly and very irregularly cut. From most of the farm-servants being employed at the same work, it was afterwards allowed to remain in the fields, until the whole reaping process was finished, at which time the stacks were more expeditiously than compactly built,—were far too many in number, and were often left for a considerable time destitute of covering. As to the indoor management, little need be said of the immense improvement which the invention of the thrashing-machine necessarily brought along with t, and which can only be duly estimated by those who remember the time and toil which were exended in manual labour. Indeed, taken all in all, he business of thrashing was one of the most roublesome connected, in former days, with the perations of a corn farm, and even then without the most irksome surveillance of the people employed, was never perfectly performed. The winnowng, or cleaning of the grain, was also another eversting process, the very remembrance of whose fficulties is enough to sanctify the memory of the an who invented a method for their cure. The d heavy Scotch plough was in general use, and few farmers were possessed either of rollers or drilling-machines. This cumbrous ploughing instrument came at length to be superseded by one of a smaller construction, something on the Dutch model, and resembling the Rotherham one; and both at last were exploded, on the introduction of the lighter and improved one of Mr Small.

In 1787 Mr Meikle having invented the Drum Thrashing Machine, one of the most important and beneficial discoveries which the agricultural art owes to mechanical genius, Mr Rennie, with the generous enthusiasm which characterized him, immediately exerted himself in behalf of the unassuming, but most indefatigable and meritorious discoverer, and caused him to erect the first machine in the county, worked with horses, on the Phantassie property, the only previous one being that of the inventor himself, at Knowsmill, near Tyningham, which was impelled by water. The merit of the discovery of the thrashing-machine by Andrew Meikle, like the discoveries of Bacon, Harvey, Watt, Davy, and other great and fortunate names, was, after his death, disputed, and by various people. Most of these claims were easily disposed of; but by the friends of the late Sir Francis Kinloch, a more serious and determined opposition was set up, it being contended for by them, that Mr Meikle's machine was copied and imitated from a model sent by Sir Francis to Mr Meikle, at Houston Mill, in 1784. In a letter, originally inserted in a pamphlet published by Mr Sheriff, entitled a "Reply to an Address to the Public, but more particularly to the Landed Interest of Great Britain and Ireland, on the subject of the Thrashing-Machine," and afterwards copied by the conductor into the forty-eighth number ot the Farmer's Magazine, Mr Rennie came forward as the defender of his venerable friend, who was then between eighty and ninety years of age; and therein gave such a lucid, well-arranged, and unanswerable statement of the historical facts relating to the discovery, so far as the claims of Sir Francis Kinloch and Mr Meikle were respectively concerned, that he may be said to have for ever settled the controversy. From his temperance and regularity, Mr Rennie kept himself in the possession of general good health, although his constitution was not naturally a very strong one; as, in early youth, he was subject to hæmoptysis, and pectoral complaints, after either severe exertion, or exposure to cold. Probably the precautions and restrictions which these threatenings subjected him to, however seemingly the harbingers of evil, operated in every respect beneficially, as they not only tended to the formation of habits which led to the prolongation of life, but to give a peculiar stamp to the character of the man. Although no anchorite, when the conviviality of the occasion required, the habitual course of his living was abstemious. He went early to bed, and, until bodily infirmities began to creep upon him a few years before his death, was an early riser, and fond of morning exercise. He died on the 6th October, 1828. In personal appearance he was slender, and never, even in his better years, exhibited any tendency towards corpulency, a circumstance which probably in a great measure originated in the activity of his mental and corporeal habits. In stature he appeared to be six feet, was dark haired, with a quick eye, and striking countenance. In a moral point of view, and in all the relations of life, his character was highly estimable. As a parent he was affectionate and kind; as a friend, sincere and attached; as a man of business, open, punctual, and accurate. In the forwarding of others, he spared neither time, trouble, nor expense; and he needed only to have merit pointed out to him, that he might exert himself in its behalf. He was not fond of attracting notice, either by speaking in public, or by writing; but the few articles he published exhibit an ability and luminousness greatly beyond the reach of ordinary minds.

ROPE MAKING. A single thread of yarn, consisting of fibres twisted together, has a tendency to untwist itself, the external parts being strained by extension, and the internal parts by compression; so that the elasticity of all the parts resists, and tends to restore the thread to its natural state. But if two such threads similarly twisted, are retained in contact at a given point of the circumference of each, this point is rendered stationary by the opposition of the equal forces acting in contrary directions, and becomes the centre, round which both threads are carried by the forces which remain; so that they continue to twist round each other, till the new combination causes a tension, capable of counterbalancing the remaining tension of the original threads. Three, four, or more threads, may be united nearly in the same manner. A *strand*, as it is called by rope makers, consists of a considerable number of yarns thus twisted together, generally from sixteen to twenty-five; a *halser* consists of three strands, a *shroud* of four, and a *cable* of three halsers or shrouds. Shroud laid cordage has the disadvantage of being hollow in the centre, or else of requiring a great change of form in the strands to fill up the vacuity; so that in undergoing this change, the cordage stretches, and is unequally strained. The relative position and the comparative tension of all the fibres in these complicated combinations are not very easily determined by calculation; but it is found by experience to be most advantageous for the strength of ropes, to twist the strands, when they are to be compounded, in such a direction as to untwist the yarns of which they are formed; that is, to increase the twist of the strands themselves; and probably the greatest strength is obtained when the ultimate obliquity of the constituent fibres is least, and the most equable.

A very strong rope may also be made by twisting five or six strands round a seventh, as an axis. In this case, the central strand, or heart, is found after much use to be chafed to oakum. Such ropes are, however, considered unfit for rigging, or for any use in which they are liable to be frequently bent.

Ropes are most commonly made of hemp, but various other vegetables are occasionally employed. The Chinese even use woody fibres; and the barks of trees furnish cordage to other nations.

The first part of the process of rope making by hand, is that of spinning the yarns or threads, which is done in a manner analogous to that of ordinary spinning. The spinner carries a bundle of dressed hemp round his waist; the two ends of the bundle being assembled in front. Having drawn out a proper number of fibres with his hand, he twists them with his fingers, and fixing this twisted part to the hook of a whirl, which is driven by a wheel put in motion by an assistant, he walks backwards down the rope-walk, the twisted part always serving to draw out more fibres from the bundle round his waist, as in the [illegible] spinning wheel. The spinner takes care that the fibres are equably supplied, and that they [illegible] enter the twisted parts by their ends, and never by their middle. As soon as he has reached the termination of the walk, a second spinner takes the yarn off the whirl, and gives it to another person to put upon a reel, while he himself attaches his own hemp to the whirl hook, and proceeds down the walk. When the person at the reel begins to turn, the first spinner, who has completed his yarn, holds it firmly at the end, and advances slowly up the walk, while the reel is turning, keeping it equally tight all the way, till he reaches the whirl, where he waits till the second spinner takes his yarn off the whirl hook, and joins it to the end of that of the first spinner, in order that it may follow it on the reel.

The next part of the process previous to tarring, is that of warping the yarns, or stretching them all to one length, which is about 200 fathoms in the full length rope-grounds, and also in putting a slight turn or twist into them.

The third process in rope making, is the tarring of the yarn. Sometimes the yarns are made to wind off one reel, and, having passed through a vessel of hot tar, are wound upon another, the superfluous tar being removed by causing the yarn to pass through a hole surrounded with spongy oakum; but the ordinary method is to tar it in skains or hanks, which are drawn by a capstan with a uniform motion through the tar-kettle. In this process, great care must be taken that the tar be boiling neither too fast nor too slow. Yarn for cables requires more tar than for hawsers [illegible] and for standing and running rigging, it requires to be merely well covered. Tarred cordage has been found to be weaker than what is untarred, when it is new; but the tarred rope is not so easily injured by immersion in water.

The last part of the process of rope making, is to lay the cordage. For this purpose two or more yarns are attached at one end to a hook. The hook is then turned the contrary way from the twist of the individual yarn, and thus forms what is called a strand. Three strands, [illegible] besides a central one, are then stretched at length, and attached at one end to three [illegible] separate hooks, but at the other end to a single hook; and the process of combining them together, which is effected by turning the single hook in a direction contrary to that of the other three, consists in so regulating the progress of the twist of the strands round their common axis, that the three strands receive separately at their opposite ends just as much twist as is taken out of them by their twisting the contrary way, in the process of combination.

Large ropes are distinguished into two sorts or classes, the *cable laid* and *hawser-laid*. The former are composed of nine strands, namely, three primary strands, each of these consisting of three smaller secondary strands, which are individually formed with an equal number of primitive yarns. A cable-laid rope eight inches in circumference is made up of 333 yarns or threads, equally divided among the nine secondary strands. A hawser-laid rope consists of only three strands, each composed of a number of primitive yarns, proportioned to the size of the rope; for example, if it be eight inches in circumference, it may have 414 yarns, equally divided among three strands. Thirty fathoms of ırn are reckoned equivalent in length to eighteen ıthoms of rope cable-laid, and to twenty fathoms awser-laid. Ropes of from one inch to two inches nd a half in circumference are usually hawser-laid; f from three to ten inches, are either hawser or able laid; but when more than ten inches, they re always cable-laid.

Every hand-spinner in the dock-yard is required o spin, out of the best hemp, six threads, each 160 ıthoms long, for a quarter of a day's work. A awl of yarn, in the warping process, contains 336 hreads.

The following are captain Huddart's improved rinciples of the rope manufacture:—

1. To keep the yarns separate from each other, nd to draw them from bobbins revolving upon kewers, so as to maintain the twist while the trand or primary cord is forming.

2. To pass them through a register, which diides them by circular shells of holes; the number in each concave shell being conformable to the istance from the centre of the strand, and the ngle which the yarns make with a line parallel o it, and which gives them a proper position to nter.

3. To employ a tube for compressing the strand, nd preserving the cylindrical figure of its surface.

4. To use a guage for determining the angle hich the yarns in the outside shell make with a ne parallel to the centre of the strand, when reistering; because according to the angle made by e yarns in this shell, the relative length of all e yarns in the strand will be determined.

5. To harden up the strand, and thereby increase e angle in the outside shell; which compensates r the stretching of the yarns, and the compresion of the strands.

A great many patents have been obtained, and orked with various degrees of success, for makg ropes. We shall confine ourselves here to a deription of two machines, figured in Plate LXXIV., e one for making rope yarns, the other for sewing at-ropes; invented by Mr James Whitelaw, and tted up by him in one of the most extensive ropeorks in Glasgow.

Twisting Machine.—Fig. 1 is a front elevation the machine for making rope yarns. This achine is set in motion, or stopped, by means of belt which works upon the fast and loose pulleys *a*. The main driving shaft *b b*, runs the whole ngth of the framing of the machine and beyond s ends. Upon the shaft *b b*, the bevel-wheels *c*, *c*, are fixed; and these wheels give motion to e frames which hold the cans *d*, *d*, *d*, by gearing to other wheels fixed to the under ends of the ames. The pulley *e*, upon the main shaft, sets motion the pulley *f*, by means of a belt passing er each; and the pulley *f* runs loose upon the indle of the rollars *g g*, and carries a teethed nion, *h*, round with it. The pinion *h*, gears into wheel *i*, fixed on the end of the spindle of the llars *k*, *k*; and in this way, it communicates mon to the top drawing-rollers. Upon the other d of the spindle of the rollers *k*, *k*, the spur heel *l* is fixed, which gears into the spur wheel fastened upon the end of the spindle of the llers *g*, *g*; and in this way these rollers are set motion. The teeth are not shown in any of e wheels. If the cans had been made of a aller size than they are shown in the figure it is pposed that this would have been an improvement. The mode of operation of the machine is as follows. The cans *d*,*d*,*d*, are first put into frames, (with very large holes at the top) similar to those shown in the fig., which run in front of the ordinary kind of drawing frame, and a large portion of twist is thus put into the sliver whilst the cans are filling. When the cans are filled at the drawing-frame in the way mentioned, they are lifted from it, and set into the frames of the machine shown in the fig., after each end of the half-formed rope-yarn has been passed through a hole made for the purpose, in the top part of its can-frame. When the cans are thus put into their frames, the end of each yarn is first passed over the top rollers *k*,*k*, then under the rollers *g*,*g*, and again over the top rollers, and under the bottom ones, after the manner of a crossed belt; then the ends are passed betwixt each pair of back guide-rollers *n*,*n*, and from them to a reel. As soon as all this is done, the machine is set a going, and the rest of the twist is put into the yarns, by the cans revolving, whilst the draw-rollers are taking them out, and passing them on to the reel; the surface of which moves at the very same speed as the surface of the rollers *g*,*g*, and *k*,*k*.

Above the top journal of each can frame a nipper is fixed, which revolves along with it. Each nipper is composed of two pieces of hardened steel, which work in a mortice cut through the cylindrical part fixed above the top journal of each can frame. These steel pieces bear upon each other at their inner ends; each of which has a semicircular groove running up and down in it, sufficiently large to hold the yarn fast, so as to press and smooth it, whilst passing through the nippers. An oval spring *o*,*o*, presses each pair of steel pieces together, and every spring has a pinching-screw, which is not seen in the fig., to regulate the strain. One of the cans is shown in section, and there is a small ring or eye for the yarn to pass through, fixed inside of each can, at the top, which eye is shown in this can. Next to the sectioned can, one is drawn showing the edge of its frame, and also the manner of holding the cans, and how they may be taken out or put into their frames. Upon the top of the last mentioned frame, one end of the steel pieces of the nippers is shown. The top drawing rollers have grooves cut into them, in order to guide the yarns; and the two pulleys *p* and *q*, which drive the reel, form part of these rollers. The pulleys *p* and *q*, have the one an open, the other a crossed belt, and there is a double clutch-box with suitable pulleys, upon an intermediate shaft; which shaft is in two pieces, and by this arrangement the reel is set in motion, stopped, or reversed. The axes of the top and bottom draw-rollers are not in the same perpendicular plane, but the top rollers overhang the bottom ones, in order to prevent the yarn when passing from the nippers on to the top draw-rollers, from coming in contact with the turns of the yarn upon the under draw-rollers. If the machine is working so as to put fore twist into the yarn, it can be altered to put back twist into it, very easily, by simply opening the cross belts, or belt, and crossing the belts or belt, which is open, upon the pulleys *a*, *a*, *e*, and *f*.

If instead of cans, bobbins filled by an ordinary roving-frame, were put into the above machine, with the spindle of each lying in a horizontal direction, the additional twist would in this way be given to the yarn, if the machine was adjusted, and set in motion in the way already described.

Machine for Sewing Flat-ropes. Fig. 2. is an elevation with one of the driving pulleys, &c. for the needles taken away, and fig. 3, is a plan of this machine:—when a part is seen in both figs., the same letters point it out in the one as in the other. The crane shown at A, draws the ropes to be sewed forwards, by the assistance of a set of blocks and tackle, made fast on the different side of the crane, from the sewing part of the machine. *a*, is its driving pulley, which is worked by a belt in the ordinary way. The crane part of the machine is stopped or set in motion by a handle *b*, which works the plate *c*, by means of the arrangement of shafts, rods, and levers, shown in the figs. A, pin upon the plate *c*, gears into a gab or snug on a friction strap, screwed upon the arms of the driving pulley; and this forms the connecting and disconnecting parts of the clutch-box. The crane is of the ordinary construction, and the teeth upon its wheel *d*, and pinion *e*, are not shown. The pulleys *f*,*f*, turn the spindles *g*,*g*, by means of a feather which holds into a very long groove cut into each spindle. The spindles *g*,*g*, are screwed, and the screwed part of each works into a nut, (made in two pieces, so that it may be tightened up if it wears,) in order that when a spindle is turned by means of its pulley, it will, by the feathers sliding into the groove, work the needle on end, as well as turn it round. *h* is a handle in connection with a screw, which works a wedge in such a way, as that it will raise or lower the under plate which presses and guides the ropes to be sewed. When a needle is set in motion, it should pass through the ropes and come out again before it stops; this is done by means of two bevel wheels, upon each of the shafts which move the pulleys that drive the pulleys *f*, *f*. Say that these wheels run loose upon the shafts, with the face of the one wheel opposite the face of the other; and that each has a friction-cone cast on it; then, if these wheels are kept always moving, by means of a third bevel wheel which gears into each pair, and if a double-ended cone be coupled to its shaft in such a manner as that it can be pushed into the one or the other of the cones upon the wheels; the shaft, and consequently the needles, will be worked backwards or forwards, according as the double cone is pressed into the cone of the one bevel wheel or the other. A weight fastened on to a lever, and working above a horizontal rocking-shaft, is the simplest method of holding the cones into gear; and all the parts necessary besides this, are required to shift the cones quickly out of gear, when the needles come out; but when a needle is as far into the ropes as it can get, then the parts must be adapted to each other, so that the double cone will be shifted from the cone on the one wheel into that of the other. The bell-crank levers *i*,*i*, worked in the manner shown in fig. 3, are for the purpose of shifting the double-cones. Each part on the outer ends of the spindles *g*,*g*, for working the bell-crank levers, is fitted, so that the spindle may turn into it when it is carried end ways with the spindle; *k*, in the elevation, is one of the rods which carry the motions of the bell-crank levers to the double-cones.

RUGBY, (anciently *Rocheberrie*,) a small town of England, in Warwickshire, situated on the south side of the river Avon, eighty-three miles N. W. from London. There are no manufactures carried on in the town, and the inhabitants of the vicinity are chiefly engaged in agriculture. Population in 1831, 2501. Rugby is only noted on account of its free grammar school, an institution which owes its foundation to Laurence Sheriffe, a citizen of London, in the early part of the reign of Elizabeth. He was a native of Brownsover, a village in the neighbouring parish of Clifton; and he endowed the school with property in that parish, and with about eight acres of land in London, called Conduit close, and now forming a part of Lamb's Conduit street and its vicinity. The metropolitan portion of the endowment has increased in value so wonderfully within the last half century, that the revenues of the school have advanced during that period from £116 a year to more than [illegible] The management of the institution is vested in twelve trustees, and the school is under the direction of a head master, with six assistant classical masters, a French teacher, a writing master, and a drawing master. There are about forty boys on the foundation; and the number of those not on the foundation is restricted to [illegible] [illegible] scholarships or exhibitions of [illegible] a year each, at either Oxford or Cambridge, are open to the scholars of this seminary; and there are likewise several university fellowships, to which the masters and assistants are entitled on retiring from the school after ten years' service. The buildings belonging to this noble institution were re-erected in [illegible], forming a handsome group in the Tudor style of architecture.

RUNJEET SINGH. See *Lahore*.

RUSSIA, (*a*.) The population of Russia amounted in 1836, to 61,000,000. Of this number, the peasantry amounted to about [illegible], nearly one-half of whom "belonged" to the crown, and the remainder to the nobles. The value of an estate is estimated by the number of "souls," that is, *male* peasants of all ages, which are upon it. On the estate of count Cheremetieff, the largest landowner in Russia, the number of his "souls," to use the ordinary phrase, amounts to [illegible]. In the interesting "Details of Russian Husbandry," contained in a recent work on Russia, by Mr Venables, and which was supplied to him by his relative M. de Sabouroff, in the government of Tambow, we learn that 200 souls are usually reckoned to furnish eighty labourers, women and men, for the wives toil as well as their husbands. These work three days in the week for their master, who gives up to them in return the half of his land. A day's labour of a man includes that of his [illegible] his horse when requisite; and a peasant cannot change his employment nor move from home without his master's leave. To a village containing 200 souls the proportion of productive land allotted to the peasantry is about [illegible] acres. A married couple have usually two acres devoted to a regular corn crop, two to a spring crop, and two to fallow, and they have generally an acre of meadow, and an acre of pasture land, with a house, outbuildings, and garden. Instead of paying rent, they cultivate an equal quantity of land on the domain of their lord.

During the long Russian winter there is little or no demand for the labours of husbandry, but as labour of any kind, although in a great degree it may be wasted or misdirected, brings [illegible] some return to the landowner or [illegible] he may be called, he employs the serfs in his factory until the season for field labour again returns. Mr Venables states that "there are few landed proprietors who do not carry on a [illegible] some kind or other." He further informs us that "not only have the Russian nobles, from the nature of their property and the constitution of their country, become manufacturers, but they carry on the business in every branch almost entirely to the exclusion of other classes, since they alone can command without difficulty, and on advantageous terms, the hands necessary for the purpose. A manufacturer who is not noble, being incapable by law of possessing serfs, while free labour is scarce, must compete at a disadvantage with a rival who can enforce the performance of whatever work he requires, and who has his operatives as it were under military discipline." The Russian peasant manifests an extraordinary aptitude for the varied abours which he is required to perform. "He will plough to-day, weave to-morrow, and help to build a house the third day." Many travellers have concurred in praising the handiness and ingenuity of the peasantry.

In addition to the work carried on in factories, there is a great amount of industry engaged in household manufactures. These afford employment during the winter, and also at other times, as they may be suspended or resumed at convenience. Mr Venables tells us that "the exercise of various arts on a small scale in private houses, either for profit or home consumption, is very great." "Many ladies employ a number, generally the children of household servants, in embroidering and making all kinds of fancy-work." "Women are mployed in spinning, weaving, knitting, carpet-weaving, &c., for the raw material in Russia is worth little, and the manufactured article alone is valuable in the market." Almost all travellers in Russia speak in terms of praise of the industry of he peasants' wives; and the same causes which ead the richer classes to employ their dependents n giving value to an article by the skilful labours of the needle, direct the female peasants to the means of increasing their humble comforts at a small expense, while time is profitably filled up for which here is no other demand. Captain Cochrane, the pedestrian tourist, says:—"The women (wives of he peasantry) I have always found engaged in some mployment: they make very good coarse woollen loths and linens, as well as knit stockings and spin hread. The whole work of the house is thrown pon them, while they also partake the labours of he field." In the towns and villages on the banks f the Kolyma, in Eastern Siberia, "the women mbroider gloves, caps, boots, and various things, in a very neat manner."

There can be no doubt, therefore, that Russia manufactures for her own consumption an immense uantity of cotton, linen, and woollen goods. The overnment makes great exertions to encourage ome manufactures, and its agents abroad are dicted to forward models of all new machinery and atterns of new manufactures to St Petersburg, nd foreign workmen are not unfrequently engaged y them to conduct Russian factories. Within the st few years great efforts have been made to improve the quantity and quality of Russian wool. he Merino sheep has been successfully naturalised, ot only in the central and southern governments, ut in Esthonia and Livonia, on the shores of the altic, where, though nature has done less, the eat care which is necessary in the management a sheep-fold has occasioned the improvement of ool to be equally if not more rapid than in more voured provinces. In 1832, a society for the improvement of wool was formed in Siberia. The first Merino sheep were introduced into the Russian empire less than thirty years since, and there are now about a million in the government of Jekaterinoslaw, and in the Crimea and the government of Cherson probably by this time nearly as many. In 1826 the exports of wool from Russia amounted to 35,800 poods; in 1834 to 281,450 poods. The purchase of Russian wool for the English manufacturer has greatly increased within the last few years, the imports of wool from Russia in 1820 having been 75,614 lbs., and in 1838 3,769,102 lbs. Our exports of woollen goods have decreased, being valued at £346,331 in 1820, and at £94,419 in 1838. The raw material in Russia has not only increased in quantity and value, but the increase has been accompanied by greater facilities in working it up for home consumption. It is only within the last twenty-eight years that factories on a large scale have been established. From 1822 to 1830 the quantity of cloth manufactured had increased from 6½ to 8 millions "arakeens;" and in the latter year two-fifths were of coarse quality, for the use of the army, two-fifths of middling, and one-fifth of fine quality.

Since 1824 the cotton manufacture has made rapid progress, as may be inferred from the following facts:—

Cotton yarn and twist exported to Russia from the United Kingdom:—

1820 - - -	8,762,324 lbs.
1830 - - - -	18,555,753
1837 - - -	24,108,593

Cotton goods exported to Russia:—

		1820.	1837.
White or plain cottons	yards	9,754,460	980,779
Printed or dyed cottons	—	3,449,391	145,760
		13,203,851	1,126,539

In 1835 new cotton-spinning establishmente were formed at St Petersburg, Moscow, and Kalouga.

Great efforts have been made to establish the silk manufacture, and especially to produce the raw material. The mulberry-tree is grown as far north as the governments of Minsk, Poltawa, and Mohilew, and southward to the base of the Caucasus. Near all the principal towns of the south, large plantations of mulberry-trees have been planted within the last few years. In the government of Charkoff, particularly, 15,000 trees are planted every year at the expense of the crown, and valuable privileges are in all cases afforded to those who embark their capital in the production of silk.

We have not the means of ascertaining the progress of manufactures in hardware and cutlery, but the advance which has been made in this branch has not been so great as in the cotton, silk, and cloth manufactures. In 1832 we exported 4596 cwts. of hardwares and cutlery to Russia, valued at £27,619; and in 1838 7082 cwts., valued at £36,830. Russia annually imports edge tools and scythes from Austria of the value of £80,000. In 1835 a manufactory of surgical instruments at St Petersburg furnished the army and the public departments with instruments of the value of 184,000 roubles. In the same year a company was established at St Petersburg for the manufacture of plated goods. The total number of manufacturing concerns in the empire in 1835 was 6045, of which 381 were established in that year. Mines, forges, and furnaces are not included in this enumeration.

In the St Petersburg Agricultural Gazette, an article is given on the varieties of climate and productions in the Russian empire, which has been translated by Mr James Heard. The author, who is said to be an eminent Russian statesman, divides Russia into the following climatic regions. 1st, The region of ice. 2nd, The region of moss. 3d, The region of forests and pasturage. 4th, The region of barley, and the beginning of agriculture. 5th, The region of rye and flax, or of settled agriculture. 6th, The region of wheat and fruit. 7th, The region of maize and the vine. 8th, The region of the olive-tree, the silk-worm, and the sugar-cane.

In adopting this division of climatic regions, it must be remembered, that they do not run exactly parallel to the equator, but decline to the south, in proportion as they extend eastward, without noticing those more minute varieties of temperature produced by accidental causes, which carry these imaginary boundaries sometimes more to the south, at others more to the north, as, for instance, on the summits of the Ural Mountains, where the cold is severe, or in some sheltered spots on the rich soil of the government of Vologda, where it is unnaturally genial.

1. *The region of Ice.*—The icy region may be considered as including Novaya Zemlia,[*] part of the Kolskaya district, and the extreme northern points of land which project into the Frozen Ocean. This region is distinguished by a night of three months' duration, and its total destitution of vegetable productions, which circumstances render it unfit for the permanent habitation of man and domestic animals. The seal, the walrus, and fish of various descriptions which abound towards the pole, supply the only means of sustenance for man, the polar bear, and its inseparable companion the fox; except on Novaya Zemlia, where multitudes of a peculiar kind of mice breed, and lay up heaps of roots for their winter store. These mice serve, in their turn, as food for the bears and foxes.

The maritime enterprizes undertaken by the commercial house of Brandt in Archangel, may probably furnish us with more authentic information concerning these parts. They have been conducted with as much courage as perseverance, and although the profits arising from them may in some measure supply the place of agriculture, yet they cannot be said in any way to be connected with it.

2. *The Mossy Region,*—where the ever-frozen ground is covered with a kind of grayish moss, and towards the boundaries of the following region, with a kind of dwarf brush-wood and fir. This tract is endowed by nature with an animal that alone makes it habitable for man, the rein-deer. Its vast deserts stretch from Archangel, along the shores of the White Sea to the Eastern Ocean, peopled by thinly scattered nomadic tribes of Laplanders, Samoyades, Ostiaks, and other aborigines, whose numbers are gradually decreasing as they come in contact with civilized nations. Besides the resources derived from the milk and flesh of the rein-deer, a considerable portion of the population is supported by fish.[†] The chase of marine animals, and such as furnish valuable furs, affords the principal employment of the inhabitants. Besides which, innumerable flocks of swans, wild geese, and other aquatic birds of passage, visit them during their short summer, and form an important part of their sustenance. Lastly, in the region, adjacent to the Frozen Ocean, at the mouths of great rivers, and near certain islands, are found those astonishing remains of antediluvian animals, particularly of the mammoth, and here was discovered that enigma for naturalists, the bones of one of those monsters, still covered with flesh and skin.

3. *The Region of Forests and Pasturage.*—By degrees the dwarf trees and brushwood of the mossy region increase in size, until we come to those immense forests, where the hand of man has not yet disturbed the majestic operations of nature. Along the banks of the rivers, and in other [illegible] unincumbered with wood, the grass shoots up with astonishing rapidity; but the lingering frosts of spring, and the early appearance of those of autumn, prevent the cultivation of corn. For this reason the inhabitants of the northern part of this district are principally occupied with the chase, especially that of the squirrel, an animal that seems to be indigenous there, and which forms the principal inducement for man to take up his abode in this inhospitable clime. The abundance of grass in the southern part affords the means of keeping cattle, while in some sheltered spots appear a few cornfields, as it were, the outposts of agriculture. The northern and eastern parts of this region are inhabited by nomadic tribes, then follow the Finns or Finlanders, a settled people chiefly dependent on pasturage for support. It would be difficult to mark with precision the southern boundary of this region, as it falls gradually into the next.

4. *The Region of Barley, and the beginning of Agriculture.*—On account of the shortness of the summer, and the early autumnal frosts, barley is the only grain successfully cultivated here, but with great care, several kinds of vegetables can be brought to maturity, and possibly potatoes might thrive. The inhabitants are Russians, Finns, Zirians, and others having settled habitations; but from the insignificance of their agriculture, they have recourse to grazing, fishing, or the chase, floating of timber, &c. In some parts, however, of the governments of Archangel and Vologda, are to be found a very superior breed of horned cattle. The southern limits of this region may be said to extend nearly to the town of [illegible]ensk in the government of Vologda, and the parts of a corresponding degree of latitude, [illegible] Nature here assumes an imposing aspect: immense forests, vast rivers, beautiful meadows, abounding in all the unexhausted luxuriance of primitive vegetation, make an impression on the traveller that can only be adequately conceived by those who have wandered through the unexplored wilds and beheld the majestic streams of the New World.

5. *The Region of Rye and Flax, or of settled Agriculture,*—extends from the limits of the former, southward to the middle of the government of Tchernigov, or to the 51st degree of northern latitude, and the districts on the corresponding line to the eastward. It would be superfluous to enter into a minute description of this vast region, which comprises the principal part of the Russian empire; we shall therefore content ourselves with a few partial observations. It will easily be perceived, that the southern part has some [illegible]

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[*] Or the New Land, incorrectly marked on the English globes and maps *Nova Zembla*.

[†] To counteract the ravages of the scurvy the inhabitants employ a kind of cochlearia.

over the northern, although they are not of such a striking nature as to demand a separation; it may even be said these advantages are more than counterbalanced by other unpropitious circumstances, which concur to depress agriculture, especially in Baylo Rossia (White Russia.) The difference between the western and eastern extremities of this region is very striking. The climate of Moscow may be called the medium, or real Russian climate, and is exceedingly favourable for all agricultural pursuits. Towards Siberia the seasons are much more inclement; while to the westward, beyond the Dneiper and Dwina, they are so mild, that about Grodno and Baylostock plums and pears grow in the open air. Under favourable circumstances, and by means of gradual naturalization to the climate, we meet with fruits even in the northern part of this region, especially apples; but even they require great care, and sometimes the trees are destroyed by the frost. The provinces situated on the Baltic, besides occupying the extreme west, are favoured by the vicinity of the sea; their climate is therefore the mildest of any in this region on similar degrees of latitude. The European part, forming one immense plain but little diversified by hills of any considerable elevation; the local difference of climate is not considerable, and arises chiefly from the forests, bogs, and the nature of the soil. Agriculture in in this region is almost, without exception, conducted on the most primitive and unimproved plan, called the *trekpolnia*, or three-field system, especially in the original Russian provinces, where we scarcely meet with any examples of the improved methods, except here and there by way of trial, or as a kind of rural luxury on the part of the proprietor; while, in the Baltic provinces, coniderable progress has been made in introducing a roper rotation of crops, and in general the nodern improvements in agriculture. The breedng of cattle has likewise remained in its original mperfect state, without any improvement, and xisting only as a kind of indispensable appendage o husbandry. An improved system of forest management is even more necessary than an imroved system of agriculture, although the latter would doubtless greatly contribute to introduce he former, for, under proper management, much ss meadow and arable land would be necessary to roduce a given quantity of corn and hay, and the rests would no longer be destroyed merely for e purpose of procuring a piece of fresh land. he distinguishing feature of this region is vast nd convenient water communication, without hich the useful products of the inland districts ould scarcely find their way to any market; by eir means the single article of tallow is exorted to the amount of forty millions of roubles nnually.

6. *The Region of Wheat and Fruit.*—It must t be inferred from this appellation that these oductions of the soil do not thrive in the last entioned region, but merely that they are much ore abundant here, and that the climate is more nial to their growth. This region may be said extend to Yekaterinoslav, or to the 48th degree latitude. Several kinds of grain, as buckwheat, llet, &c., are cultivated here with much greater ccess than in the last described region. The ltivation of tobacco, although it exhausts the il, is rapidly spreading, and will eventually come a source of great profit. Hemp is also found to thrive better than in more northern situations, but the chief object of the agriculturist is the breeding of cattle. Studs of horses and sheep-farms exist here as separate establishments; but the breeding of horned cattle is generally connected with husbandry, and on a much larger scale than in the northern provinces. Bee-hives are also a source of no small profit, especially to the peasants. The abundance and cheapness of corn encourage distillation. Spirit is thus the principal and almost only article of fabrication. The greater part of this region was colonized later than the preceding, and the stability of its population in the southern part can only be dated from the conquest of New Russia and the Crimea. This country may be called the granary of the empire, for it supplies not only Petersburg and the army, but furnishes the principal part of the raw productions (except flax) for exportation.

In consideration of the vast importance of this region, we must extend our observations to several points connected with its husbandry, namely, the steppes, the population, the variations of the climate, the extent of the villages, and the general method of cultivation. *The steppes* are peculiar to eastern Europe and middle Asia; and are altogether distinct from the American savannahs, which, during the tropical rains, are partially inundated. The natural causes of the destitution of forest on the steppes are, 1st, The hardness and tenacity of the earth, which in many places is of such a nature as to prevent the growth of trees without previous digging and breaking up of the soil. 2d, The black loam of which they consist is not favourable to the growth of forest. 3d, The aridity of the climate and the elevated situation of the steppes, which latter circumstance probably occasions the growth of a number of dwarf fruits, especially apples, which are found on bushes no higher than the grass. 4th, The predominance of salt in many parts is not only unfavourable to the growth of trees and grass, but renders the soil unfit for agricultural purposes. The accidental causes consist in the destruction of the woods, of the former existence of which there have been discovered indubitable traces. Such destruction may be accounted for by the nomadic habits of the former inhabitants; by the burning of the steppes in dry seasons, the destruction of the young trees by the cattle, &c. This is the more probable, as, from a very remote period, this country was the abode of various tribes now extinct, who carried on an unceasing predatory warfare against their more settled agricultural neighbours. Forests once thoroughly destroyed seldom, if ever, flourish again unless cultivated by the hand of man; and the country, thus left bare and exposed to every wind, becomes arid, and the climate greatly deteriorated. The steppes, in general, may be divided into the grassy, the heathy, the saline, the sandy, and the stony, not to notice the low grounds covered with reeds. These steppes have considerable influence on the population and husbandry of this sixth region. If, on the one hand, they are favourable to the breeding of cattle; on the other, their destitution of wood, the unfitness of the soil in many parts for farming purposes, the variable nature of the climate, the difficulty of preserving the cornfields from the inroads of the cattle, and, above all, the scanty supply of water, all concur to retard the adequate increase of the settled population, and to give rise to a wretched method of culture called the *perelog* plan.* The sterile part of the steppes is scarcely less profitable than that which is cultivated, for on it are found the salt lakes, probably the remains of a sea which at some former period covered the country, or perhaps their saline qualities may arise from strata of rock-salt forming their beds, or the qualities of the soil through which the various rivulets run in their course to the lakes. It is not improbable, that, by means of perseverance in an improved system of cultivation, many saline districts may become fertile in the production of useful plants. Some parts may be laid under water to great advantage, especially if they succeed in constructing conduits of fresh water. But the chief advantage derived from the steppes is the means afforded of rearing large flocks of fine-woolled sheep. Considering the low price of land in Russia, the immense extent of the steppes that furnish good pasturage for sheep, and the cheapness of labour and bread, the period may arrive when Russia will furnish the greater part of Europe with wool, except perhaps the very finest sorts, which it may be more convenient to produce where sheep breeding is connected with agriculture in its highest state of improvement; and even towards this end the Baltic provinces have made considerable progress. The variety of climate in this region is much greater than in the last described. The western governments, as Keiv and Podolia, are favoured with very mild seasons, but towards the east, the ungenial effects of the vicinity of Asia are plainly felt, even without entering Siberia, and the more so as we approach the limits of the next, or seventh region. This variation is distinctly visible in the productions of the earth, it being no longer possible, though on the same degree of latitude, to produce and rear those plants which thrive in the west. Perhaps, in the course of time, when the soil and forests are properly cultivated, a considerable improvement may take place in the climate.

With respect to the population of this region, it may be divided into the old established Russian inhabitants, who have from time immemorial dwelt in the western governments of Kiev, Podolsky, Malo-Rossia, &c., and those that have settled at a later period in Kursk, Saratoff, &c. The original Russian governments are pretty well peopled, according to their extent, and the imperfect system of agriculture which has hitherto prevailed,—a system requiring a far greater extent of arable, meadow, and forest land than would be necessary under an improved system of husbandry; so that, in some parts, a want of land has been felt, especially in Little Russia and the government of Poltava, where the former prosperous condition of the people has been considerably deteriorated by the extraordinary increase in the consumption of ardent spirits.

7. *The Region of Maize and the Vine.*—Although the vine and Indian corn are characteristic productions of this region, it must be remembered that it produces also all those common to the last described. The vine, as is well known, thrives only in certain climates and situations; and Indian corn is not to be considered as an exclusive product, but rather as a distinguishing feature. This region includes Bessarabia, the New Russia, the territory of the Don Cossacks, the government of Astrachan, and the Caucasus. The southern part of Siberia, from the peculiar nature of the climate, can scarcely be said to form any portion of it. The greater part of the above mentioned governments and districts consists of steppes, partly used as pasturage, and in part unproductive. The Crimea (at least the southern part of it), belongs rather to the next region. The hilly parts of Bessarabia are fruitful and well supplied with wood. The low lands are steppes, which, towards the Danube, are covered with reeds, and the air unwholesome. On the banks of some rivers, and in various other parts, the vine may be cultivated to advantage. The government of Cherson presents a vast plain intersected by deep narrow ravines or dells; the soil is hard, and but little suited to the growth of trees, without the assistance of art, exposed to frequent droughts, and consequently to bad harvests; besides which it is at times (as well as other parts of the seventh region), subject to the ravages of the locust. The government of Yekaterinoslav suffers less than that of Cherson; but eastward towards the Donetzky ridge, near Bakhmut and Slavianoserbsk, droughts are more frequent. The northern part of the government consists of steppes fit for pasturage, and abounding in salt; the southern part enjoys a most genial climate, especially along the shore, where the sea has considerable influence on the atmosphere, but this tract belongs properly to the eighth region. Not only the vine and other delicate fruit-trees grow here in perfection, but also the olive, the caper, &c., which have been planted, thrive, and will doubtless, in the course of time, be cultivated on a large scale. The southern parts of the government of Taurida are steppes, but capable of cultivation. The territory of the Don Cossacks is also steppe, towards the south-east, but fit for all the purposes of husbandry. Coal is found in the Donetzky ridge, as well as mines of lead and iron. Other parts are more or less suitable for the purposes of agriculture and the growth of the vine. The government of Astracan, has, in many parts, a sandy soil, affording scanty pasturage for the cattle, and the vine is cultivated in the Asiatic manner, by irrigation, which renders its fruit unfit for wine. The northern part of the Caucasus is principally sandy, interspersed with saline tracts and rivulets. Breeding of cattle is carried on to great advantage by the nomadic tribes which inhabit it. The southern parts towards the rivers Terek and Kuban are good for tillage, especially towards the west. In the environs of Kizliar, a kind of wine is made that is chiefly used in the distilling of brandy, and no doubt there are many other situations where the vine would thrive. The territory belonging to the Cossacks of the Black Sea, consists partly of very low grounds, the rest resembling the western part of the Caucasian government. Population is but thinly scattered in this region, and the attempts at agriculture are all of recent date. A considerable portion of the population is of Asiatic origin, and not a few of the tribes still retain their nomadic habits. The other inhabitants of the country consist of Russians, Moldavians, Bulgarians, Greeks, and German colonists, the latter including the Menonists, celebrated for their superior husbandry. Gardening, as a speculation, is carried on to a considerable extent, but the numerous flocks of Merino sheep form the principal source

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* This consists in sowing corn on fresh land, until its productive powers are exhausted, and then abandoning it, to seek another spot to cultivate.

wealth, and they may yet be augmented to an almost incalculable extent.

The principal defect of this region is the almost total absence of forests, and the great difficulty of rearing trees. Thus for want of wood the inhabitants are obliged to burn reeds, *buyan*,* straw, and *kizyak* †; but the employment of the two last mentioned articles is contrary to the rules of good husbandry, although it can hardly be said that the time is arrived for the introduction of an improved system into these provinces.

8. *The Region of the Olive Tree, the Silk Worm, and the Sugar-cane.*—This region includes the provinces beyond the Caucasus (Zakaukasky), but the climate, owing to the mountainous nature of the country, is exceedingly various, as may be seen by the diversity in the productions of the soil. The plants peculiar to hot climates grow in the valleys, while the hills are covered with corn and pasturage for cattle. The soil is also of various kinds, and towards the east there are extensive steppes. The local climates of this region may be divided in the following manner; first, The summits of the mountains always covered with snow; then the beginning of vegetation, where nothing but pasturage for cattle is found; then follow the corn-fields; below them the vine flourishes, and we meet with the mulberry and other fruit trees; while still lower, in the vallies, particularly in the Persian provinces, grow cotton, rice, and other southern productions, which require artificial irrigation, an operation familiar to the inhabitants of Asia. The olive thrives chiefly in the western part, and only in those spots peculiarly suitable to its culture. The sugar-cane, that important colonial production, has been planted, and is spreading in some of the low and rich lands about Kura. This succession of climates, according to altitude, presents a curious resemblance to the climates as they follow each other according to latitude. The forest region is the only one that is wanting in the Zakaukazian mountains. The country beyond the Caucasus produces spontaneously several objects of great value, as a peculiar kind of cochineal, assafœtida, &c., which may become the sources of great ultimate advantage. The most important, however, of the productions of this region, is doubtless silk, which may be said to be indigenous to the country.

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SADLER, Michael Thomas, F.R.S. a parliamentary orator, who distinguished himself by his philanthropic exertions in the cause of the poor and the labouring classes, was born at Snelstone, a village in the south of Derbyshire, in January, 1780. He was descended on the father's side from the celebrated Sir Ralph Sadler, one of queen Elizabeth's ministers, and an important instrument in bringing about the reformation. His mother's family were French refugees at the revocation of the edict of Nantes. He was educated principally at home, and exhibited extraordinary powers of mind in very early youth, having mastered the higher branches of mathematics and astronomy by the time he was eleven years of age. His father intended him for one of the learned professions; but, when about eighteen years old, he was induced to join his brother in business at Leeds, where he continued engaged in mercantile pursuits, but not to the exclusion of more congenial literary labours, until he was called into public life by the ministerial proposal of the Catholic relief bill. On a vacancy occurring for the borough of Newark-upon-Trent, in March 1829, a deputation of the electors waited upon Mr Sadler, at Leeds, and invited him to become a candidate. He immediately complied, and triumphantly conducted an arduous contest, though opposed by Mr Serjeant Wilde, one of the most able and energetic members of the bar. Mr Sadler immediately distinguished himself by a very long and eloquent speech against the Roman Catholic claims, delivered in the House of Commons on the 17th of the same month; and during the continuance of the discussion he was a prominent champion of the Protestant cause. At the general election of 1830 he was again chosen for Newark, and in 1831 for Aldborough, in Yorkshire. At the election of 1832, his late borough being disfranchised, he was a candidate for the new borough of Leeds; but, though highly esteemed by a large number of his townsmen, his reputation as an anti-reformer preponderated against his less equivocal merits, and he was unsuccessful. During his parliamentary career, he was chiefly occupied in supporting whatever he thought would advance the happiness of the mass of society; and his political views for ameliorating the condition of the lower orders were indeed most extensive, and the measures which he himself introduced into the legislature for this benevolent object most comprehensive and important. He brought a bill into parliament to provide agricultural parishes with the funds for allotting small portions of ground to their deserving poor, which, although it did not become a legislative enactment, was extensively circulated, and has been acted upon in several parishes with the happiest results; in one large parish not only to the greatly increased comfort of the poor, but to the almost complete extinction of the poor-rates.

For Ireland he always expressed the deepest interest and sympathy, and twice introduced, enforced by the most impassioned and touching eloquence, the important measure of a poor law for that country into parliament; on the last occasion losing his proposition by a nominal majority only. Of this humane measure he was in public and private the powerful and unwearied advocate, and, undismayed by the general opposition it provoked, brought the cause of those who had "none to plead for them" again and again before the British public. During the last session he sat in parliament, Mr Sadler was almost wholly occupied in prosecuting a bill he had brought before the legislature for the protection of children employed in manufactories—the ten-hour bill, as it is familiarly called. This measure was referred to a select committee, of which Mr Sadler was chosen chairman, and the toil and responsibility thus imposed upon him of collecting the vast mass of evidence contained in their report, probably laid the foundation of his long and fatal illness. Neither did he, after all, succeed in passing this measure of mercy, although the voice of public opinion compelled his reluctant opponents, in a subsequent session, to bring one forward professedly similar.

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* The high grass of the steppes.

† Dried cow-dung.

Mr Sadler was the author of several highly esteemed works, the most important of which are, "Ireland, its Evils and their Remedies,"—and an elaborate essay on "The Law of Population," in two vols. 8vo., written principally with a view to controvert the opinions of Malthus. A third volume, completing this scientific and admirable work, was unfortunately never finished. His death took place, at New Lodge, near Belfast, on the 29th of July, 1835. At the time of his death, he was leading partner of the firm of Sadler, Fenton, and Co. of Belfast. In private life he was affectionate, generous, affable, and accessible to all. His appearance was remarkably that of a man of genius; and there was an enthusiasm and energy in his manner strikingly characteristic of an elevated and powerful mind. His social qualities were of the highest order, and his conversation was eminently brilliant and instructive. It was said by lord Bacon, at the close of life, "the poor have been ever precious in mine eyes;" and no man could more fully adopt this Christian sentiment than Mr Sadler. As a statesman, his parliamentary career was invariably characterised by integrity, honour, benevolence, sound judgment, and genuine independence of mind. In depth of reasoning, in perspicuity of argument, in extensive information, in aptitude of reply, in commanding eloquence, he had scarcely a competitor in the British House of Commons.

SAGO, (*a.*) The sago of commerce is the product of a species of palm which grows naturally in various parts of India and Africa. It is one of the most common, and at the same time one of the most useful of the vegetable productions of the countries in which it is found. The central vein or rib of its ample leaves is used by the natives of Africa for various useful purposes; they form it into weapons of offence, and they employ it for the purpose of capturing fish: for this purpose a species of fish-hook, resembling the barb of a harpoon, is fixed to one end, to the other a line is fastened, which is afterwards passed round the body of the sportsman. Thus armed, he wanders along the sea-shore, and on the banks of the river, and whenever he perceives a fish, throws his dart, and generally with success. His prey is allowed to remain for some time, without an attempt on his part to draw it out of the water, until it is sufficiently exhausted by its efforts and by loss of blood.

Of the perfect leaves the Indians form fences to their fields, coverings to their houses, and when properly fastened together by means of bundles of trees, the dwellings themselves, these habitations are much more durable than could be expected, on account of the great strength and thickness of these bundles of leaves.

The natives of Africa obtain a liquor from the tree, which much resembles palm wine, but is stronger and of a deeper colour. They have two methods of extracting this liquor; the first consists in collecting the sap in calabashes, from incisions made in the fleshy substance of the summit of the tree from which the new leaves proceed. The second plan is to collect a quantity of the fruit, to strip it of its rind, and steeping the kernels in the sap already noticed, diluted with water, to allow the whole to ferment. This second kind of wine is higher coloured, and more intoxicating; it sparkles like champagne, and can be kept a considerable time.

The production for which this tree is best known in Europe is sago, although other trees of the palm tribe also yield it in greater or lesser quantities. The sago is principally extracted from the pith which fills the trunk of the palm, and is of a more delicate colour and nature in the young than in the old trees.

The trunk of the tree being split in the direction of its length, the operator removes the pith which he breaks in pieces, and throws into a vessel made from the bark of a tree, and placed over a horse-hair sieve; he then pours water over the mass and the finer parts of the pith pass through the sieve, and are received in pots which are provided for the purpose; the fibrous portions of the pith are retained by the sieve.

The liquid thus obtained is, in the first instance turbid, from the quantity of matter it holds in solution; this, by degrees, settles to the bottom of the vessel, and the clear liquor is drawn off. The mass that remains is then passed repeatedly through shallow dishes of metal perforated with numerous small holes; this is continued until it is sufficiently dry to prevent the grains into which it is formed by the process, from again becoming united. The reddish tinge which is observed in the sago of commerce, arises from the effect of the heat to which it is submitted to render it perfectly dry.

In the Moluccas and the Philippine islands, the soft paste of the sago, before it is dried, is formed into cakes about six inches square and of the thickness of the finger. These are strung together in bunches of ten and twenty and exposed for sale; it is also employed in the making of puddings, gruel, and for the same culinary purposes to which wheaten flour is applied in this country.

The sago palm is a tree of moderate height, seldom attaining to twenty feet. The fruit, which is a dry oval cone covered with small scales, grows in clusters, forming a large oval tuft or bunch.

There is a palm-tree closely allied to the sago palm, which grows in great abundance in South America, in the neighbourhood of the Orinoco: to this tree a native tribe, the Guaraons, are indebted for nearly the whole of their subsistence; and thus, says Humboldt, "we find in the lowest stage of human civilization, the existence of a people depending entirely on a single species of tree, in the same manner as some insects are confined to certain parts of a flower." The Guaraons also form their habitations, if they deserve the name, from the leaves of this tree, they [illegible] from the fibres of its leaves, and during the rainy season, when their country is under water, they live on the summit of the trees. The mats they form are suspended from tree to tree, and covered on the upper side with clay. On these moist couches the women light the fires necessary for their cookery, and the traveller, who during the night is floating down the stream of the river, sees lights, as it were, suspended in the air at a considerable elevation.

In addition to the nourishment derived from the pith of this tree, a wholesome repast is furnished by the kernels of the fruit when ripe.

SANDFORD, Sir Daniel Keyt, K.B., D.C.L., professor of Greek in the university of Glasgow, was the second son of the Right Reverend Daniel Sandford, bishop of the diocese of Edinburgh, and was born in that city on the 3d of February, 1798. He received the rudiments of his education under the superintendence of his excellent and accomplished father, (who died in Jan. 1830); and both at the high school and university of Edinburgh, he was the best Grecian of his time. In 1813, he was placed under the care and tuition of his godfather, Mr Keyt, at Runcorn, in Cheshire, and remained there two or three years, pursuing his classical studies with enthusiastic ardour. In 1817, he entered Christ Church, Oxford, and soon attained the first rank among the students in that celebrated seat of learning. Of the university debating club, in which questions not only on literature, philosophy, and history, but even on general politics, were discussed with freedom, Sir Daniel became an early and active member, and there first learned the art, as well as tasted the delight, of stirring the hearts and exalting the minds of a large concourse of men. In 1820 he took his degree with first class honours, and gained the university prize in 1821. The subject was the "Study of Modern History," which he discussed with great acuteness and eloquence. The Greek chair in the university of Glasgow having become vacant by the death of professor Young, Sir Daniel, although an Episcopalian, was, on the recommendation of men of all parties, elected his successor in September, 1821, at the early age of twenty-three. He entered with enthusiasm on the duties of the professorship in the beginning of the session of that year, and not only sustained but increased the celebrity of the Greek chair. He introduced many improvements into the system of instruction that had been pursued by rofessor Young; and by his unrivalled skill as a eacher, and the enthusiasm of his classic genius, wakened a new interest in the study of Greek lierature, not only in the university of Glasgow, ut throughout all Scotland.[*] Among the scholrs of Great Britain, he held the very first rank, nd, perhaps, since the time of Porson, it has been stly observed, there has been no one equally disinguished for profound and elegant scholarship, nd an exquisite and happy mastery over the subtle iceties of the Greek tongue.

Ambitious of political distinction, Sir Daniel took an active part in the numerous meetings for parliamentary reform which were held in 1831 and 1832, and by his extraordinary abilities as a public speaker, rapidly attained great popularity. On the first election of members for Glasgow, under the reform bill, he was one of six candidates who contested for the representation of that city, and on that occasion he stood third on the poll. In 1834, he was elected member for Paisley, and the faculty of the college left it optional for him to return among them at the end of a year, should his success in his parliamentary career not equal his most sanguine expectations. He sat one session in parliament, but as his health during that period was much affected, he deemed it prudent to resign his seat. In the beginning of the following winter he resumed his academic labours, and his return to the peaceful and Attic retreats of Glasgow college was hailed with delight by his colleagues, by the students, and the friends of education in general. From this time till his death, he lived during the session in college, and in the summer in the vicinity of Rothesay, in the island of Bute. He died of typhus fever, at Glasgow, on the 4th of Feb. 1838, in the fortieth year of his age, and, in conformity with his own wish, was buried in the high church-yard burying ground, Rothesay. His remains were followed in mournful procession, to the place of embarkation, at the Broomielaw, by the professors and students, magistrates and clergymen, of the city, besides a large number of the most respectable inhabitants, while all the vessels in the harbour had their colours hoisted half-mast high.

Sir Daniel was married to Miss Charnock in 1824, and left a young and numerous family. The honour of knighthood was conferred on him at St James's palace, by William IV., in 1830; and during his residence in London, in 1834, he took the degree of doctor of civil law. His personal appearance was prepossessing. In stature he was about the middle size, and of graceful figure. His countenance was pale, his features sharp, and his forehead high and expanding. His eyes, though apparently weak, and in general heavy, assumed great brilliancy when he became animated in speaking or reading. His manners were affable and courteous in the highest degree. His private tastes, and the bias of his mind, were decidedly classical, which tended to imbue his habits and capacities, as a teacher of Greek, with a generous warmth and enthusiasm, that contributed largely to his success in this department of elegant learning. As a public speaker, few equalled him in the grace and variety of his oral addresses, or exhibited equal mastery over the feelings of an audience. He possessed great tact in the management of his subject —was rich and ready in his illustrations—and keen and sarcastic in his irony. Sir Daniel published several elementary works for the use of his class, such as a translation from the German of Thiersch's Greek Grammar, Greek Extracts, Introduction to the writing of Greek, Exercises in Homeric and Attic Greek, &c. He also contributed a variety of valuable articles to the Edinburgh Review and Blackwood's Magazine. In the latter periodical, his poetical translation of the Plutus and Nubes of Aristophanes, and several papers entitled Alcibiades the Boy and Alcibiades the Man, were highly esteemed. But his most finished production was the Essay on the Rise and Progress of Literature, which he wrote for this Encyclopedia, and which has been pronounced by professor Wilson of Edinburgh, and other competent critics, to be alike admirable for the learning, judgment, and eloquence which it displays, and, as a summary of the subject, to be unsurpassed by any thing of the kind in the English language.

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[*] The general character of the classical students of the uniersity of Glasgow may be gathered from a simple fact ought forward by Sir D. K. Sandford in 1828. "At that ite, the Glasgow exhibitioners had formed, for fourteen years, bout *one-twentieth* of the resident under-graduates of Balliol, xford, and yet had obtained *one-third* of the university honrs which had fallen to the share of that college; that is, the oportion of academic distinctions was nearly *as seven to one* in vour of the Glasgow exhibitioners, over the students coming om all other institutions and all other parts of the kingdom. he proportion has not been diminished since the time when is calculation was made."—See *Observations by the Princil and Professors of Glasgow college, on Schemes of Reform oposed for the university of Glasgow.* Glasgow, 1837.

SANDHURST, a parish in Berkshire, England, in which is situated the royal military college, for the instruction of cadets intended for the army, and officers possessing military commissions. The two branches of this institution were first placed at High Wycombe in 1799, and removed to Great Marlow in 1802, by their founder the late duke of York. The establishment was removed hither in 1812, and since 1820 both branches have been united. The senior department is a school for the staff, where officers are admitted to study; and the junior department, for the professional education of young gentlemen intended for the army. Since its foundation more than 3500 individuals have been rendered competent to serve in the army. The institution is governed by a general and a colonel as lieutenant-governor, with other officers acting under the board of commissioners. The building, which is a plain neat edifice, with a doric portico of eight columns, is calculated to receive 400 cadets and thirty students of the senior department. The houses of the governors and officers form a square at the rear of the college. There are also an observatory, a room for examinations, a chapel, and a spacious riding-house. The whole stand in the midst of finely laid out grounds and plantations; and in the front of which is a spacious sheet of water. Population of parish in 1831, 673.

SAXONY, (*a.*) *Statistics*.—The total population of Saxony—

In 1832 was 1,558,153
1834 — 1,595,668
1837 — 1,652,114

Number of each Religious Denomination.

Christians.—	Evangelical Lutherans	1,630,393
—	Calvinistic Reformists	1,803
—	Catholics	28,998
—	Greek Church	72
Jews		848

From a comparison of the amount of the population, as found by the census of December 1837, with that of the preceding census of December 1834, it appears that, in the intermediate period of three years, an increase arose of 56,446 individuals, or 3·537 per cent.—3·709 per cent. of males, and 3·375 per cent of females; which is for each year an increase of 18,815: that is 1·114 per cent. by additional births, and 0·065 by assumed immigration. This is the average rate of the "movement" of populations in central Europe. A recent statistical work, in two vols. 4to., on the Prussian district of Dusseldorf, shows that population, which in 1816 was 577,000, and in 1835, 720,760, to have steadily increased somewhat above 1 per cent. per annum by the excess of births over the deaths, throughout the intermediate period of twenty years. However, the disturbing effect of contingent circumstances causes the excess of births to range generally between ½ and 3 per cent. By an excess of ½ per cent. per annum, a population is doubled in 139 years; by 1 per cent. in 70 years; by 1½ per cent. in 46½ years; by 2 per cent. in 35 years; by 2½ per cent. in 28 years; and by 3 per cent. in 23½ years.

The whole area of the kingdom of Saxony contains 271·676 geographical square miles, and the total number of the population in 1837 was 1,652,114. There is therefore, on average, [illegible] persons to each geographical square mile for 1837; and for 1834, 5,873. Excluding the military, it is for 1837, only 6,023; and for 1834, [illegible]. In three years there appears then to have been an increase of 208 to the square mile; and, excluding the military, an increase of 206.* The [illegible] amount of the town and country inhabitants was, in 1837, as 1,000 of the former to 2,[illegible] of the latter; and in 1834, as 1,000 to 2,108.

The proportion of males to females, in the whole population of 1837, including the military, was as 1,000 to 1,055; and, excluding the military, as 1,000 to 1,070. The proportion of males capable of bearing arms constitutes generally one-fifth part of the population.

With regard to the relative numbers of the different religious denominations, it appears that, on an average of the whole population, there are in 100,000 inhabitants—

Lutherans	[illegible]
Calvinistic Reformists	[illegible]
Catholics	[illegible]
Greek Church	[illegible]
Jews	[illegible]

Which compared with the numbers in 1834, [illegible] the increase of—

Lutherans	to be	[illegible]	in 100
Reformists	—	113	—
Catholics	—	[illegible]	—
Greek Church	—	[illegible]	—
Jews	—	[illegible]	—

Including the number of married persons living separate, and the military, there is somewhat more than $\frac{1}{10}$ of the whole population married, or 342,565 in a million: that is, one marriage to [illegible] inhabitants.†

The number of children under the age of fourteen years, in 1837, amounts to somewhat more than ⅓ (in 1834 almost exactly ⅓) of the whole population. So that, excluding the military, and the married persons living apart, there are, on an average, very nearly two children under fourteen to each married couple; or to every 100 couples, [illegible] children under the age of fourteen.

With respect to the proportion of sexes among widowed persons living, it appears that, on an average in 100 of this class, there were, in 1837, thirty widowers, and seventy widows; and in 1834, twenty-nine widowers, and seventy-one widows.

The number of persons deaf and dumb is to the whole population as 1 to 1,401. (For 1834 as 1 to 1,579, and for 1832 as 1 to 1,334.) And the number born blind is as 1 to 3,876. (For 1834 as 1 to 4,924, and for 1832 as 1 to 3,673).

The Saxon statistical society publishes annually a very elaborate tabulated abstract of the local registries of births, deaths, marriages, and number of religious communicants, throughout the kingdom.

The following is the annual average number of births during the six years from 1832 to 1837—

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* For the sake of comparison, it may here be stated that the whole area of the kingdom of Prussia contains [illegible] geographical square miles, and in 1837 the total population was 14,098,125; which is, on an average, 2,[illegible] persons to each geographical square mile. In France, according to the census of 1836, the number to each square mile (English) was, with the exclusion of Corsica, 156. In England, by the census of 1831, there were 250 persons to the square mile; in Wales 108; in Ireland 243; and in Scotland 84.

† In Prussia the proportion of the number married in 1837 was something more than one third of the whole population, or 335,144 in a million.

	Males.	Females.
Legitimate . . .	28.472	26,625
Illegitimate	4,453	4,246

Twin births, pairs of males 293, of females 259; one of each sex 255.

Births of three at once 7; born dead, males 1,716, of females 1,248.

Total of births, males 32,925, of females 30,871; of males and females 63,796.

A comparison of the number of children born in 1837, namely, 64,593, with the total number of inhabitants at the same time, namely, 1,652,114, shows the fact of the birth of one child to 25·57 inhabitants.

In 1837 the number born was greater by 13,529 than the number of those who died. In 1836 it was greater by 18,532.

The excess of males over females born was, in 1837, 5·27 per cent.; and, on an average of the six years, 1831-37, it was 6·24 per cent.; that is, there were born to 100 males 94·76 females, or to 100 females 105·56 males. Generally the annual proportion of births of males to females is as twenty-one to twenty; and the proportion of deaths of male to female children as twenty-seven to twenty-five, so that in the period of maturity the sexes are nearly equal in number.

Of the whole number born in 1837 the proportion born dead was 4·61 per cent.; in 1836, 4·76 per cent.; and the average of the six years, 1832-37, was 4·64 per cent.

The number of twin births, in the same sexennial period, was 4,835; the number of births of three at once, forty-four; in the year 1833 there were fifteen. The proportion of male to female children is, in the twin births, as 100 to 91·86.

In 1837 the illegitimate children born were to the legitimate as 1 to 6·2; in 1836 as 1 to 6·15; and to the total number born as 1 to 7·2. On an average of the six years the proportion of illegitimate to the legitimate is as 1 to 6·33, and is 2-15ths of the whole number born. In the sexennial period, 1836-37, there were, on an average, 5·5 illegitimate children to 1,000 inhabitants.[*] The number of illegitimate births is found to be greatly augmented by the existence of well-supported institutions for foundlings; and a remarkable confirmation of this assertion is furnished in the city of Mayence, where the abolition of the foundling hospital has been directly followed by an important decrease of illegitimate births.

Considering the number of births, with regard to different months, it appears that the greatest number, 6,002, occurred in January; and the least, 4,470, in November; and this remark is equally applicable to the average of the six years. Indeed, t is a fact confirmed by all carefully kept registers, that the greatest numbers of births are found in he first months of the year.[†]

Of the 64,595 born in 1837, there were,—

	Males	Females.	Total.
Legitimate . . .	28,569	27,069	55,628
Illegitimate	4,602	4,365	8,967

n the same year there died—

	Males.		Females.		Total.
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.	
At Birth . . .	1,425	295	1,035	225	2,980
In the 1st year . ,	7,812	1,547	6,389	1,246	16,994
Between the 1st & 6th years	2,895	289	2,719	329	6,232

The proportion of the numbers born dead to the whole amount of deaths is as follows:—

	per cent.		per cent.		per cent.
1832	5·9	1834	5·96	1836	6·63
1833	5·5	1835	7·	1837	5·83

Annual average of the six years . . 6·12 per cent.

In the whole number born dead, the proportion of males to females is as 100 to 72·73. The proportion of the number of illegitimate to legitimate children born has been shown to have been as 1 to 6·2, or 16·13 per cent.; and with regard to the number of each class born dead, that of the illegitimate is to the legitimate as 1 to 4·73, that is, 21 per cent.; showing a rate of mortality greater by 5 per cent. among the illegitimate. The deaths before the completion of the first year show 1 of an illegitimate child to 5·08 legitimate; and from the first to the sixth year (commonly the first of school-going) 1 to 9·08. Of legitimate children the proportion born dead is 4·42 per cent., and of illegitimate 5·8 per cent.

The greatest proportion of deaths, in places having above 1,000 inhabitants, has been 1 to 18·5 persons. And here it may be remarked, that the statements exhibited in the works of some eminent writers that the ratio of mortality is always greater in the town than in the country population, is controverted by the honourable director of the Saxon society, who says that, many of his own observations serve to prove the reverse. That the great advantages of pure air, athletic exercise, simple food, and exemption from habits of luxury, are often partially, if not wholly counteracted by the inferiority or deficiency of medical attendance in sickness, disregard of cleanliness, bad food, spirituous drinks, and excessive labour. That only in very large and densely populous cities the mortality exceeds the medium ratio; and that only in wealthy villages it falls below the medium: while throughout whole rural districts, where poverty and destitution prevail, the rate of mortality, instead of the general average of 1 in 34, is as high as 1 in 12. However, the present returns for Saxony exhibit results at variance with this assertion, for of the total number of deaths in 1837,—namely, 51,064,—18,070 occurred among the inhabitants of towns, comprising a population of 533,303; and 32,994 among inhabitants of villages and rural districts, comprehending a population of 1,102,887; showing that the average ratio of town mortality was 3½ per cent., and that of the country scarcely 3 per cent. In England the town and country populations are not separately registered. The returns of the last census in 1831, confuse the numbers of inhabitants of towns with those of the parishes of which they constitute a part, so as to prevent the possibility of discrimination; for, in many instances, the parishes are of great extent.

In general the proportion born dead is considerably less in the country than in towns, especially in large and densely populous capitals.

In 1837, the proportion of marriages (13,546) to the whole population (165,214) was 1·64 per cent.; in 1836 it was 1·63 per cent.

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[*] In Prussia, in 1837, there were born 518,392 legitimate children, and 39,501 illegitimate; the latter being to the former s 1 to 13. In France, according to the last census, the proportion of illegitimate in the whole numbers of births was, in he department of the Seine, 31·3 per cent., that is, nearly ne-third.

[†] Dr Guiette, of Brussels, having made some curious investigations respecting the influence of day and night on human rths, has found that in nineteen years, out of 5,448 births, 949 occurred in the night, and 2,499 in the day. That the reatest numbers were at 11 in the night (358); and at 2 in the ight (304); while the least numbers were at 7 in the morning, d 3 in the afternoon.

The greatest proportion (1 to 116 inhabitants) was in the district of Bautzen, and the least (1 to 124) in the district of Dresden.

Of the 162 marriages of parties differing in religious profession, in 1837, sixty-nine were marriages of protestants with catholics. In 1836, by the death of married persons the number of marriages dissolved was 10,273; in 1837, 11,856; still the number of married couples exhibited an increase amounting to 3,273.

A general comparison of the registrations relating to central Europe gives the following average results:—

	Births.	Deaths.	Marriages.
In villages	1 to 23	1 to 40	1 to 115
Towns	1 — 27	1 — 30	1 — 105
Large capitals	1 — 31	1 — 25	1 — 113

SCILLY ISLANDS, (*a*.) The Scilly islands lie about nine leagues west by south from the Land's End, Cornwall, from which they are clearly visible. This wild and romantic cluster of rocks, many of which, on a distant view, appear like old castles and churches rising out of the sea,—although scarcely known, except perhaps, by name, to most persons in this country, possesses very considerable claims on our attention. These islands were known to the ancients. By the Greeks they were called *Hesperides* and *Cassiterides*, or the *Tin* islands, probably from their contiguity to Cornwall (where the Phœnicians traded), for not a vestige of any ancient mine can now be discovered upon them.

It is evident, however, that they have undergone great changes since the period referred to, as Strabo speaks of the islands as not exceeding ten in number, whilst now there are upwards of one hundred and forty, only six of which, however, (for the greater portion are mere rocks,) are inhabited. These are,—*St Mary's*, which contains twelve hundred inhabitants; *St Agnes*, three hundred; *St Martin's*, six hundred; *Trescow*, three hundred and fifty; *Bryer**, two hundred; and *Sampson*, one hundred and fifty†; making an aggregate of about two thousand eight hundred inhabitants, which are rapidly increasing, the births greatly exceeding the burials; indeed, so healthy is the climate, and so robust are the people, that it is a common saying amongst the Scillonians, "that for one man who dies a natural death, nine are drowned." Cases of deformity are unknown.

St Mary's is the largest of the Scilly islands, being about nine miles and a half in circumference, and containing, as we have seen, nearly as large a population as the rest of the group. It possesses an excellent harbour and pier; and carries on some trade, vessels to the value of £20,000 belonging to it; indeed, twelve fine schooners were at one period launched in the space of six months. The hills are rocky, rising in some places to a great height, and are enriched with mineral ores. The valleys are generally fertile; although there is some marshy ground: the island contains three towns, has a custom-house, a garrison, and druidical remains abound in several places. It seems not improbable, that St Mary's will at no great distance of time, be divided by the sea.

St Agnes, being the most elevated of the islands, and lying directly exposed to the Atlantic ocean, has been chosen for the erection of a very high and strong granite light-house, which stands nearly in the centre, in the latitude forty degrees, fifty-three minutes, thirty seconds, north. The structure, which was built in 1680, has been rendered admirably adapted for the purpose for which it is designed. The machinery is now so contrived, that its light progressively sweeps the whole horizon at intervals of three minutes; and by irregular intermission and increase, is readily distinguished from every other on the western coast. There is also an obelisk on the island of [illegible], which is almost as valuable a sea-mark in the day-time, as the light-house is at night.

The inhabitants of St Agnes, and the most western of the islands, derive their chief means of support in winter from piloting ships; while in summer they cruise about the channel for the purpose of disposing of fish, eggs, vegetables, &c., to homeward-boupd vessels. There are five boats in St Agnes, employed in this way, each sloop-rigged, of a burden of twenty-two tons, and navigated by seven or eight men, who are joint proprietors in the venture, and respectively share the produce of their industry on shore. They sometimes run on these excursions thirty leagues to the westward, and in case of the homeward-bound being detained by contrary winds, make their terms accordingly—the market being here regulated by the *winds* alone.

One important good, however, results from the summer cruises of the Scillonians, for they are thus enabled to give information of their situation to those vessels which have been driven out of their reckoning from stress of weather and other causes; this information, we are told, has saved many hundred ships, and almost numberless lives, which would otherwise have been lost on the rocks of Scilly. On this ground alone, the Scillonians have a strong claim on the generosity, not only of the British merchant and ship owner, but on the government itself.

SCOT, DAVID, M.D. professor of oriental languages in St Andrew's, was a native of the parish of Pennicuick, where his father was a small farmer. He was educated at the university of Edinburgh for the ministry, and licensed as a preacher. Seeing, however, no immediate chance of promotion in the profession for which he had qualified himself, he became a student of medicine, and obtained the degree of M.D. But as languages were his favourite study, he applied himself to the cultivation of oriental literature, for which he was chiefly prepared by his intimate knowledge of the Hebrew. Having made himself master of most of the eastern languages, both ancient and modern, including Syriac, Ethiopic, Arabic, and some knowledge of the Sanscrit, Dr Scot directed himself to the important business of teaching and preparing young men intending to go out to India. In this department he was eminently successful, and many of his pupils made a distinguished figure not only at the company's colleges in England, but in our civil and military services in Hindostan.

In 1814 the church of Corstorphine, in the neighbourhood of Edinburgh, became vacant, and Dr Scot was presented to that parish, after he had remained for more than eighteen years an unpatronised and unprovided preacher. In this charge he continued to labour for nineteen years, gaining the esteem of his people not more by his simple, unaffected style of preaching, than by his modest, unassuming manners. About 1832 an opportunity offered for resuming those literary pursuits connected with oriental languages, to which he was ardently addicted, in the vacancy that had then taken place in the Hebrew chair of St Mary's college, at St Andrew's. Of the various candidates for the situation, Dr Scot was selected, as possessing the highest and most undisputed qualifications. His appointment infused a considerable degree of enthusiasm among the young men of that university for the study of oriental literature; but unfortunately his career was short, as he was spared to discharge the duties of his office only for two sessions. Ever fond of learning in all its branches, he visited Edinburgh to be present at the meeting of the British association; but was immediately seized with a dropsical complaint, and, after two or three days' illness, died September 18th, 1834. Dr Scot was well known to the literary world by his various publications. Among others he edited Dr Murray's History of the European Languages; and published Essays on Belles Lettres, Lives of some of the Scottish Poets; a Key to the Hebrew Pentateuch; another to the Psalms, Proverbs, Ecclesiastes, and Song of Solomon. He also published a Hebrew Grammar for the use of his own class, and a volume of sermons, "Discourses on some important Subjects of Natural and Revealed Religion, introduced by a short view of the best Specimens of Pulpit Eloquence given to the World in Ancient and Modern Times."

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* Between *Trescow* and *Bryer*, there is a very commodious and safe harbour, called *New Grimsby*, much frequented by coasting vessels in the winter.

† *Scilly*, which gives its name to the group, is, singularly enough, one of the smallest, not exceeding an acre in extent.

SCOTT'S MONUMENT. The first monument erected to the memory of Sir Walter Scott was in George Square, Glasgow. It consists of an elegant stone pillar 80 feet in height, surmounted, by a statue, the latter from the chisel of Mr Ritchie of Musselburgh, and admitted on all hands to convey an excellent likeness of the great novelist. In Edinburgh, the native city of Sir Walter, it has been resolved to erect a monument to his memory on a very magnificent scale, from a design by Mr George Kemp,* a self-taught artist. As this monument may be truly considered a national one, collections for it having been made in all quarters of the country, and as some time may elapse before its erection is completed, we make no apology for presenting the reader with the annexed cut of its geometrical elevation.

It may be remarked, that the design which has been adopted, was submitted in public competition with the most distinguished architects of the country, all of whom, it may be supposed, were emulous of the honour of being employed in the erection of what may be called a national undertaking. And the patient investigation as well as the judgment and fine taste displayed by the gentlemen of the committee in making the selection, afford an example well worthy of being imitated. To use the words of the sub-committee, "The monument of Sir Walter Scott will be dear to his countrymen without the adventitious aid which is derived from the mere celebrity of the sculptor, or of the architect by whom it is executed; and it is a gratifying reflection, that the designs now proposed (for the statue and the monument), while they are characterised by great excellence in their respective styles, are the production of native artists, who owe their present success solely to their own genius and personal merits."

The architectural department of the monument is in the form of a gothic cross, the square of the basement of which is fifty-five feet, and the entire height is 180 feet. The groined arch of the basement for the reception of the statue, is 40 feet high from the platform of pedestal to the crown of arch. There is an octagonal room over the groined arch, 15 feet diameter, which it is proposed to fit up as a library to contain the works of Scott. The abutment towers at the angles of the cross are each 91 feet high, in one of which is placed the stair to the first gallery. There are four galleries at different stages, with small winding stairs to each; the highest is 168 feet above the level of the ground.

In any architectural composition, the first requisite is *expression*, and an erection in honour of departed genius should be of such a character as to point out at once to what department of architecture it belongs. The architect, Mr Kemp, has in this respect been singularly felicitous in selecting the form of the gothic cross for his composition. All are acquainted with the fine specimens of gothic crosses, erected by Henry of England, in memory of his beloved Eleanor, and the form has been sanctioned for such uses by the custom of ages. In addition to this, such a form affords an admirable arrangement for the disposition of the statue of the immortal bard. Placed under the great arch of the basement, on a slightly elevated platform, surrounded by a broad flight of steps, it is at such a height from the eye of the spectator, that its excellence as a work of art, and its resemblance to the original may be fully appreciated.

What adds to the interest of the design is its being a composition from Melrose abbey, the finest gothic structure in Scotland, and which is, besides, peculiarly appropriate in this instance, being the favourite haunt of the bard himself, who has identified it with his own immortal verse. The groining of the great arch over the statue is the same as one of the compartments of the choir which is still entire. Many of the turrets, capitals, flowered enrichments, and pinnacles, are composed entirely from this finest specimen of the gothic.

Nothing can be more beautiful than such a plan —the sitting statue reposing under the lofty vault open on every side, will unite admirably with the architecture. In bright and sunny weather, some portion of the figure will always be in strong illumination, beautifully relieved by the dark masses of shadow behind; and a thousand reflected lights from the roof, the buttresses, the pedestal, and the floor, will play around the head and general figure.

After a great deal of discussion, it was at length resolved to place the monument in the eastern division of Prince street. It will thus be seen along the whole extent of that magnificent terrace, and will compose well with the picturesque but subdued masses of the old town in the distance, which will form the back ground. Being placed in the finest part of the city, the stranger from distant lands will not require to ask where is Scott's monument; it will form a conspicuous and beloved feature in "mine own romantic town," from the

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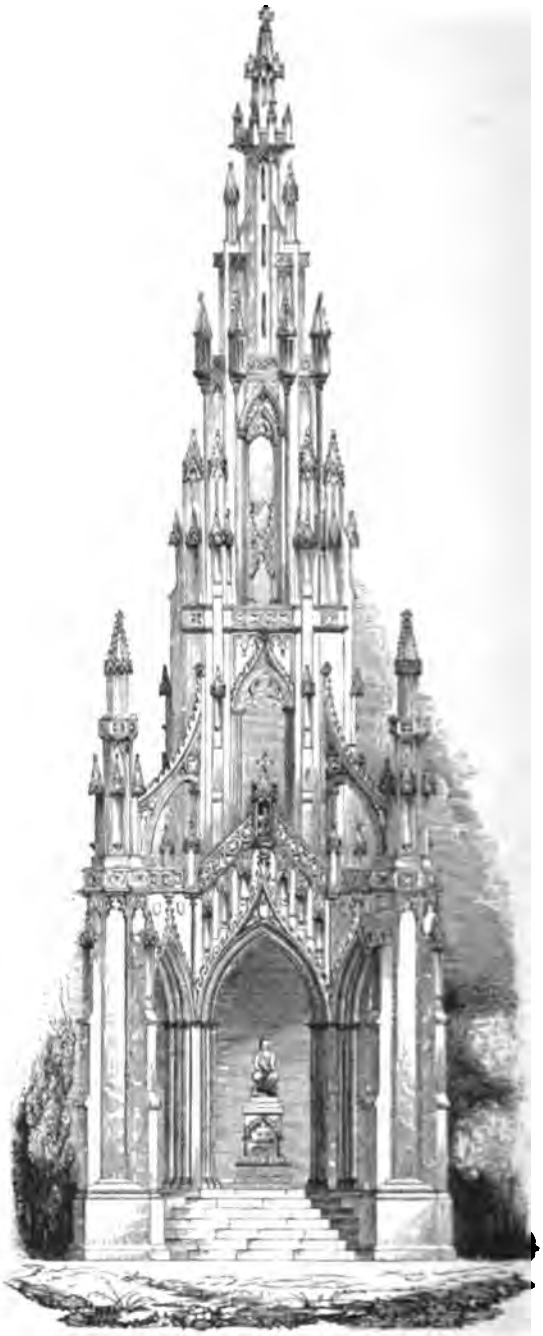
* We understand, that Mr Kemp, animated by a fine enthusiasm for his art, has, at great personal sacrifice, prepared a model of his design for the restoration of our Glasgow Cathedral; and were the same disinterested zeal displayed in this case as in that of Scott's monument, we might hope to see the metropolis of the west ornamented by one of his productions unrivalled for beauty, combining all the elegance of the Scott monument, with all the grandeur of the most magnificent cathedral.



Scott's Monument, Edinburgh.

fferent galleries of which he may command a ınoramic view of the matchless landscape comınations of the Scottish metropolis.

SELBY; a town in the West Riding of Yorkıire, 178 miles from London. It is situated on ıe banks of the river Ouse, over which is here a ridge, so constructed as to open and shut for the lmission of vessels. Steam packets ply regularly om Selby to Hull. Flax spinning used to be ırried on here to some extent, but the trade has eclined. There is some business done in shipuilding. In the year 1069, William the Conueror founded an abbey at Selby for Benedictine iars, which he visited in the following year for ıe purposes of endowment, and being accompanied y his queen Matilda, she was here delivered of a ɔn, who ascended the throne under the title of lenry I.; the remains of the abbey church show ; to have been a noble structure, erected at variıs periods and in different styles of architecture. lere are places of public worship for the Society f Friends, Independents, Calvinistic and Wesleyan lethodists, Unitarians, and Roman Catholics; and grammar-school, founded by Edward VI., which as received several endowments at different periods. 'opulation in 1831, 4600.

SHERBORNE; a town in Dorsetshire, 117 ıiles W.S.W. from London. It is divided by the iver Ivel into two parts, called Sherborne and 'astleton. The town was anciently a bishopric, ut in the year 1075, the see being removed to alisbury, the cathedral was converted into an bbey; it was originally a noble structure, but reat part of it was burnt in the reign of Henry 'I.; at the dissolution of monasteries it was made arochial, and is now one of the finest churches in he west of England. The inhabitants are chiefly mployed in the silk and linen, haberdashery, and utton manufactures; the woollen trade, which ormerly flourished here, has fallen to decay. The ld castle of Sherborne was first erected in Saxon imes; but soon after the conquest it was annexed o the bishopric of Salisbury. We hear nothing urther of it until the times of the civil wars in ing Charles's reign, when, after having stood out or a long time in favour of the royalists, it was at ength taken, after a siege of sixteen days, by 'romwell and Fairfax. A great quantity of amnunition, provisions, plate, &c., was found here, nd many distinguished prisoners were taken. The arliament soon after ordered the castle to be deolished, which was immediately done, and but ew vestiges of it now exist. With a portion of he materials, the mansion now called Sherborne 'astle, or Lodge, the seat of the earl of Digby, as erected. It is a singular edifice, built in the orm of the letter H, and it stands in a beautiful nd extensive park. Population in 1831, 4075.

SHERBURN; a town in the West Riding of he county of York, situated on the great road om Doncaster to York, 185 miles from London. t is a place of great antiquity, and is celebrated r its cherry orchards, and for a peculiar kind of lum. The church is an ancient Saxon structure, uilt in a style equally rare and magnificent. 'opulation of town in 1831, 1115; of parish, 3068.

SILURIAN SYSTEM. Those geological strata hich have long gone under the general, though omewhat vague, term, transition series, have been ately minutely explained in the Welsh and Engsh districts, by Mr Murchusin; and he has imosed on them the name of *Silurian System* from the ancient title Silures, given to the people inhabiting the district, by the Romans. The Silurian strata are found rising from below the old red sandstone in Herefordshire, Shropshire, Radnorshire, Brecknockshire, Monmouthshire, and Caermarthanshire, and they rest on the older slates, some of which are of the true gray-wack character, comprising the upper part of a series termed the Cambrian system. The silurian system is divided into upper and lower, thus:

Upper Silurian.	1. Ludlow strata, upper and lower, with a central gem of limestone. 2. Winlock (Dudley) limestone and shale.
Lower Silurian.	3. Caradock sandstone. 4. Llandilo flags.

About 350 fossil remains have been discovered in these strata of different character from those found in the superincumbent old red sandstone; the depth of strata in some places amounts to 2000 or 3000 feet. Equivalents to the Silurian rocks have been discovered in Belgium.

SLAVERY, (*a.*) In the body of the work, under *Slavery*, we noticed the act passed by the Whig administration for the total abolition of Slavery throughout the British colonies, and expressed a hope that we would be enabled to record, in the Supplement, the final liberation of the slave. This hope has been fulfilled by the memorable act, which was passed by parliament in 1833. The slaves were, on the 1st of August, 1834, made apprenticed labourers, to continue such, a part of them, till the 1st of August, 1840, when they were all to become completely free. To indemnify the owners of the slaves, parliament voted them the sum of £20,000,000 as a compensation, payable in certain fixed proportions, according as each colony should be ascertained to have complied with the terms of the act.

Soon after the passing of this act, the slaves in the islands of Antigua and the Bermudas were made free by the colonial governments; and acts were afterwards passed by the legislatures of Barbadoes, Jamaica, Nevis, Montserrat, St Christopher's, St Vincent, and Tortola, liberating all the slaves, or apprenticed labourers, in those islands, on the 1st of August, 1838. Movements of a similar nature took place in the other islands; and there is now not a slave left in any British colony. The following table of the Distribution of Slave Compensation money is curious.

Table, showing the average value of a Slave in each Colony; the Number of Slaves in each, by the last Registration; the total value of the Slaves; and the Proportion of the £20,000,000 to which each Colony was entitled, according to the statement of the Commissioners.

	Average value of a Slave from 1822 to 1830.			No. of Slaves by the last Registration.	Relative value of the Slaves.			Proportion of the £20,000,000 to which each Colony was entitled.			
	£	s.	d.		£	s.	d.	£	s.	d.	
Bermuda,	27	4	11¾	4,203	114,527	7	5¾	50,584	7	0¾	·41
Bahamas,	29	18	9¾	9,705	290,573	15	3½	128,340	7	5¼	·47
Jamaica,	44	15	2¼	311,692	13,951,139	2	3	6,161,927	5	10¾	·36
Honduras,	120	4	7¼	1,920	230,844	0	0	101,958	19	7¾	·92
Virg. Islands,	31	16	1¼	5,192	165,143	9	2	72,940	8	5¾	·76
Antigua,	32	12	10¼	29,537	964,198	8	10¼	425,866	7	0¾	·12
Montserrat,	36	17	10¾	6,355	234,466	8	0¾	103,556	18	5	·38
Nevis,	39	3	11½	8,722	341,893	6	3½	151,007	2	11¼	·39
St. Christoph.	36	6	10¼	20,660	750,840	7	1	331,630	10	7¼	·03
Dominica,	43	8	7¼	14,384	624,715	2	0	275,923	12	8¾	·30
Barbadoes,	47	1	3¼	82,807	3,897,276	19	0¼	1,721,345	19	7	·87
Grenada,	59	6	0	23,536	1,395,684	16	0	616,444	17	7	·03
St. Vincent,	58	6	8	22,997	1,341,491	13	4	592,508	18	0¾	·96
Tobago,	45	12	0¼	11,621	529,941	16	2¾	234,064	4	11¼	·65
St. Lucia,	56	18	7	13,348	559,890	16	4¾	335,627	15	11¼	·19
Trinidad,	105	4	5¼	22,359	2,352,655	18	0¼	1,039,119	1	2¾	·11
Brit. Guiana,	114	11	5¾	84,915	9,729,047	13	5¼	4,297,117	10	6¼	·30
C. of G. Hope,	73	9	11	38,427	2,824,224	7	9	1,247,401	0	7¾	·76
Mauritius,	69	14	3	68,613	4,783,169	15	3	2,112,632	10	11	·98
								Defic. fractions,			·06
Total,				780,993	45,281,738	15	10¼	20,000,000	0	0	

SOLAR RAYS. We take the opportunity afforded us under this head of making a few remarks upon the concentration of the sun's rays by burning glasses, with the view to explain more clearly than our previous articles have done, the *rationale* of their fusing power. If the reader refers to *Burning Lens*, and *Speculum*, he will find nothing to determine the power beyond the long recognized law that the density of the foci in any two lenses is *directly* as the areas of the glasses, and *inversely* as the squares of the focal length. Experience shows, however, that this law is insufficient to determine the fusing power; for if we take lenses perfectly proportional in area and focal length, we get focal images of *equal intensity*, which notwithstanding *act very unequally* on the substances exposed to them. In Lardner's Cyclopedia, vol. 19, p. 131, we find the following remarks by Brewster, illustrative of what we have just mentioned, and serving at the same time to show that the different powers of images *intensively* the same, but *extensively* different, are at the present day regarded as inexplicable phenomena:

"M. Buffon found that a convex lens, of long focal length, was preferable to one of a short focal length for fusing metals by the concentration of the sun's rays. A lens, for example, 32 inches in diameter, and 6 *inches* in focal length, with the diameter of its focus 8 lines, melted copper in less than a minute; while a small lens, 32 lines in diameter, with a focal length of 6 *lines*, and its focus ⅓ of a line, was scarcely capable of heating copper."

This passage does indeed relate an inexplicable phenomenon unless we exchange the italics for 6 *feet* and 6 *inches*; for never had lenses such marvellous foci before. Our correction agrees with the proportion between the focal length and the diameter of the focal image, which is 108 : 1. We are surprised to hear Sir D. Brewster speak of *focal length* as the measure of burning power: in the present case, it would have been more philosophical to have said, that M. Buffon found a convex lens of large surface much preferable to one of small surface, when the surfaces, foci, and focal images of the two were strictly proportional.

Now according to the law before named, the burning power of these two lenses should be the same. Let P equal the power of the larger lens, and p that of the smaller one.—

$$\text{Then } 32^2 : \overline{32 \div 12}^2 :: 6^2 : 72^2$$

$$\text{And } P : p :: 32^2 \times 6^2 : \overline{\overline{32 \div 12}^2 \times 72^2}$$

$$\text{That is } P : p :: 36864 : 36864 \text{ i. e. as } 1 : 1.$$

Buffon, however, found that the fusing power was incomparably greater in the larger than in the smaller lens. How then are we to account for this difference of action? We naturally look to the relative magnitudes of the focal images; and a little consideration will assure us, that though their intensity is the same, *space for space*, the largest image must produce considerably more effect than the other; *because* the heat at the centre of the large image cannot be dissipated, or conducted away, nearly so rapidly as the heat at the centre of the small one. If we are not mistaken, the fusing power of the focal images formed by the two lenses quoted by Brewster, is *directly* as the squares of the radii of the images. Hence we say:—

$$P : p :: 4^2 : \tfrac{1}{3}^2$$

$$\text{That is, } P : p :: 16 : \tfrac{1}{9} \text{ or } 144 : 1.$$

Mr Pritchard, one of the first authorities of the day in all optical matters, remarks, in a [illegible] letter to us,—"With respect to burning lenses, it appears to me that no experiments have been made with sufficient accuracy to deduce a *formula* from them." He then alludes to the [illegible] of Herschel and Goring in the "Micrographia," regarding focal images: we do not, however, find in them any thing that goes beyond the established law stated at the commencement of this article. Under present circumstances we offer our [illegible] for determining the intensity, as an [illegible] to accurate experiment by which alone it can be properly tested.

SOTHEBY, William, a gentleman of liberal fortune and education, who distinguished himself by his poetical translations, was born in London on the 9th of November, 1757. By the death of his father, when only seven years old, he was put under the guardianship of the honourable Charles Yorke, afterwards lord Chancellor, and of his maternal uncle, Hans Sloane, Esq. By them he was placed at Harrow, where he remained till the age of seventeen, when that active disposition which accompanied him through life induced him to enter the army, instead of completing his education at either of the universities. He purchased a commission in the tenth dragoons, from which he immediately obtained leave of absence, and passed some months at the military academy at Angers, for the purpose of more fully studying the principles of his profession. On quitting Angers, he spent the following winter and spring in the brilliant courts of Vienna and Berlin, and, returning through the South of France to England, rejoined his regiment towards the close of 1777. Upon his marriage in July, 1780, he quitted the army, and purchased Bevis Mount, near Southampton, where he continued to reside for the next ten years.

He now principally devoted his time to the diligent study of the classics, to the translation of many of the minor Greek and Latin poets, and some original compositions, which his cautious taste did not deem worthy of publication. In 1788, he made a pedestrian tour through Wales, which gave rise to some odes and sonnets, with a poetical description of that romantic country, published in 1789, under the title of "A Tour through North and South Wales." In 1791, he removed to London, and from this time made the metropolis his principal place of residence. He was now elected a fellow of the royal and antiquarian societies, and became a member of the Dilettanti, and some other literary and scientific meetings. At his own house he was also in the constant habit of receiving persons of talent of all parties, both in politics and in literature, where the warmth of his manner and cheerful tone of his mind, threw a peculiar charm over the society. In 1798, he published a translation from the Oberon of Wieland, which became immediately popular; and in [illegible], a poem on the battle of the Nile.

In 1800 his well-known translation of the Georgics of Virgil appeared. In [illegible], his love of the fine arts prompted him to address his friend Sir George Beaumont, in "A Poetical Epistle on the Encouragement of the British School of Painting." In 1802 he first published the tragedy of "Orestes," on the model of the ancient Greek drama, accompanied by a mask entitled "Huon de Bordeaux," founded on the poem of Oberon, and interspersed with many elegant fairy songs adapted to the music of Viotti. In [illegible], he published an original sacred poem, in blank verse, under the title of "Saul." His next work was of an entirely different description, being principally suggested by the admiration he felt, and the pleasure he derived, from the perusal of the poetical writings of Scott, which induced him to compose "Contance de Castille, a metrical Poem in ten cantos," published in 1810: many of the descriptive passages, and the spirit of the whole, will show that he was not an unsuccessful imitator of the romantic style of "Marmion," and "The Lady of the Lake," then in the first freshness of their justly deserved popularity. In 1814 he republished the "Orestes," together with four other tragedies, one of which, called "Julian, or the Confession," had already been represented at Drury Lane; and in 1815 a second corrected edition of "The Georgics, with notes," appeared.

In 1816–17, accompanied by his family, he passed eighteen months in travelling through France, Switzerland, and Italy, returning by Germany. This tour gave rise to a series of poems, many of which were composed on the spot, or addressed to some of the celebrated individuals with whom he associated during his travels; but, owing to a variety of circumstances, they were not published till some years after, under the title of "Italy." After his return he employed himself in revising his translation of the Georgics, and preparing for the press a folio edition, published in 1827, containing the original text, and the translations of De Lille, Soave, Guzman, and Voss, together with his own. The summer and autumn of 1829 he spent in Scotland, about which time he undertook a translation of the Iliad and Odyssey. Early in 1831 the first edition of the translation of the Iliad was published: and during the following year he completed that of the Odyssey, and corrected his version of the Iliad, preparatory to a second edition. He lived to see this most favourite employment finished and ready for publication, embellished with engravings from the classical and elegant designs of Flaxman. His death took place on the 30th December, 1833, in the seventy-seventh year of his age.

SOUND. Mr William Shand has favoured us with the following observations, which are in part extracted from a series of essays in the Medical Gazette, commencing the 15th December, 1838, and intended to illustrate the agency of sound in the stethoscope and the human ear.

Sir John Leslie observes that the doctrine of sound is the most subtile and abstruse of any in the whole range of physical science, and it must be admitted that until a certain sequence of leading facts, and of the principles by which it is governed, shall be ascertained, every attempt to arive at practical utility must in a great measure ail, and can by possibility only succeed in a very limited degree.

I consider the following to embrace several of he principles or laws which govern the phenomenon of sound, and as the only mode by which hese could be ascertained. I have endeavoured to race its operations in different bodies from its oriin externally to the nerve of hearing, which is he last vehicle of communication with the brain. The two actions, and the laws by which they are overned, are not alone material to the science of coustics, as regards the economy of speech, or the gency of sound in the organ of hearing; but until these shall be understood and acted upon, perturbation and derangement must prevail in all mechanism in a state of motion, from the magnetic needle that defines our position on the globe, and points out the mariner's way, to the ponderous train and the metallic chords of the railway, which support and guide its course.

1st. Sound is usually produced in bodies more dense than the atmosphere, by sudden percussion, and the action of one body upon another; and it is considered to be the result of different modifications of matter only.

2nd. Rapid agitation, causing the atoms or crystals of a solid, by their extremities to act upon each other, creates sound, *whether this action be occasioned by original impulse or by reflection.* It is regulated by the principles of attraction and repulsion; and it cannot be produced, conducted, or reflected, in any case, without being preceded by vibratory action.

3d. As the atoms or crystals of solids vibrate repeatedly, and ultimately return to their primitive positions, they produce more intense and continuous sound than fluids, the component parts of which pass each other and do not return to their original positions.

4th. In conformity to the density of the atoms, their form, and the medium distance between them, is the intensity, duration, and velocity of sound.

5th. As all sonorous bodies, whilst they conduct, or reflect, also create sound, it is obvious that to preserve the original character of sounds, the reflecting or conducting body must in its movements accord in time with those of the body which produces or forms the original sound.

6th. As vibration is necessary to produce, conduct, or reflect, every still body must arrest sound, on the same principle that a body at rest, being in contact with a wheel moving round its axis, impedes its progress.

7th. Slow pressure compresses a few atoms only, but rapid percussion occasions action, reaction and sound, throughout hard bodies.

8th. A solid, to produce much sound without great impulse, must be of limited diameter in one direction, for it vibrates most in this direction, because the atmosphere yields more than the solid.

9th. In every sonorous body there are two different actions—the tremulous or vibratory action, *which mainly creates sound;* and the undulating or oscillating motion, which consists of a certain number of atoms moving together.

10th. The undulation or oscillation by separating the action of the atoms, also determines the duration of each distinct sound in a body, and in the organ of hearing. In a string the nodal point which separates the waves is easily defined, but in an expanded thin body the termination of the wave varies according to the form of the body, and is not easily perceptible, and it is frequently irregular in action and sound, so as to produce confusion in the ear.

For the reasons given, if a rod be struck on the end, or a thin expanded body on the edge, little sound is produced.

11th. The chief distinction between hard solids and fibrous substances is, that the latter possess more of the adhesive and less of the repulsive principle; they require to be more distended in a longitudinal and superficial direction; and intensity of sound is more by the extent of their excursions than molecular action.

12th. Fluids are more powerful conductors than productors of sound, but conduct less rapidly than solids. Their atoms or component parts pass each other, and do not return to their original places as do those of solids; this accounts for sound passing in all directions in the atmosphere, but most in the direction in which most impulse is given; *also why the same degree of percussion produces more sound in hard solids than in the atmosphere;* and why in transit there is less change in its original character.

13th. Sound is much influenced by moisture in the atmosphere. Intensity and distance of transit are regulated more by the adjustment of particles than the proportion of moisture. For instance it is loud and passes furthest during frost, and at all times when objects are seen to a great distance. This is peculiarly perceptible within the tropics, and in this country in summer just as the sun sinks under the horizon; but when cold increases and the particles of moisture become larger, these effects are diminished. It follows as a matter of course, that its transit must be more or less rapid under such varying circumstances.

14th. Water conducts more powerfully and rapidly than the surrounding atmosphere, and, so far as I have been enabled to ascertain, with increased effect as it approaches the temperature of the human body. This is exemplified in tropical rivers and in the human ear, where this fluid is the only body in contact with the nerve of hearing, to which it must communicate sound consistently with its original character.

Sound is not produced by the atmosphere alone, without violent concussion, or being in contact with a more dense medium. Being the offspring of atomical action in bodies, and in degree of intensity in the ratio of their adhesive and repulsive principles, it cannot be produced in a vacuum, nor in a still body; but the latter may, by concentrating or confining a fluid, increase action and sound for a limited time after a certain impetus has been given to the fluid, in like manner as a stream of water is increased in velocity by being confined. As it not only operates differently in every different substance, but undergoes certain change in intensity or the nature of sound by every change in the molecules or surface of any mass of matter, there are no limits to the various effects that are produced by such changes.

In all cases it is difficult to reason upon the operations of nature and the motions and influence of matter not perceptible to the eye. In the present case, however, we are enabled to judge partly by our ocular faculty, and in part from our sense of hearing.

That the vibratory and undulatory or oscillatory actions are not only prevalent in the musical string, but in all matter in a state of agitation, is indicated by the following facts. In a musical string of given diameter and tension, when set in motion, the extent of the undulations are in the ratio of the length of the string; each undulation gives out a distinct sound, conformable in duration to the extent of the undulation. The cause of the separation in the sounds, and that each continues just so long as the motion continues, is demonstrated by the simple fact, that if any light small material be placed on the nodal point between the undulations, it remains on the string; but if placed on the wave, it is thrown from the string. In the flat brasses in a musical box it is regulated in like manner, but differing somewhat in the undulations; because in the former case the string is fixed at both ends from which there is a pre-determined reaction, while the vibrating brasses are fixed at one end only. Similar action is apparent in a common rope or cord, when extended on the ground, in order to define a straight line for any purpose; the line is stretched by a sudden motion of the hand, a single motion of which produces many undulations in the cord, in number in conformity to its length. The same principle of action are exhibited in aqueous fluids, in the atmosphere, and in solids of great expanse.

In the ocean, sound continues just as long as a wave is in motion, and the greatest run of sea, and elevation and extent of wave, is exhibited where there is a deep indent in the land. Were the motion of the water in this case ruled alone by the current of air, on its surface, the waves would move uniformly in the same direction, but this is not the case.

These circumstances are, however, most perfectly defined by the atmosphere, because sounds are by it transmitted in all directions with the least change in their original character, and if analogical reasoning is to be applied in this case, and it be admitted that sound is only produced by the action of bodies on each other, and cease the instant these become still, in it there must be alternate intervals at rest during vibratory action, in order to keep apart sounds in conformity to their original formation.

Thus the Creator has adjusted and regulated the atmosphere for these purposes, but in all ordinary materials it is left for man to economise his arrangements.*

In order to demonstrate that predominant sounds are conducted by the fibre of the wood of which the stethoscope is composed, I have made various trials with this instrument on the human ear, and advanced many experimental facts, to prove that the tremulous and sonorous pulsations of the atmosphere are not, as has been universally believed, collected on the superior surface of the concha or pinna of the ear, and conducted by what is termed the auditory canal to the membrana tympani or pelt of the drum, and thence through the tympanic cavity of the ear to the labyrinth, but must necessarily operate by the vibratory pulsations of the atmosphere impinging upon and producing vibration in the pinna, which is a fibro-cartilaginous lever or fulcrum, and that it is conducted by the solids and denser fluids that surround the auditory passage and tympanic cavity to the labyrinth. To confirm this theory, the following facts are important.

1st. It appears to merit particular notice, that notwithstanding sounds reflected on a speaker occasion great fatigue and exhaustion, arising, I suppose, from their influence on the mouth and parts adjacent, this should take place while the external ear is supposed to be without vibratory action.

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* In reasoning on this abstruse subject, I have not hesitated to oppose whatever has been uniformly propagated and received as truth to demonstrations; but after much consideration I believe that vibration and sound operate more extensively in the atmosphere, in a vertical direction, and [illegible] the earth's surface, mainly from the facts, that sounds from underneath, striking within a vertical arch, produce louder and more prolonged reflections than when it operates within a horizontal arch. This is peculiarly perceptible in speech, in which the vertical curvature prolongs sound [illegible] articulation more than a horizontal curvature. This I shall illustrate more fully in an Essay, now in the course of preparation for the Medical Gazette.

when the form and peculiarly elastic properties of the pinna are considered.

2nd. Wherever matter is at rest, sound ceases; consequently that part of the ear which the atmospheric pulsations reach before they arrive at the membrana tympani, cannot be still.

3d. When one individual listens to another who is addressing him, his face is turned towards the speaker, so that sound is received upon the ear from in front.

4th. There is then in front and centre of the auricle, a small angular projection, called the Tragus, which covers the auditory passage, and throws the wave of sound over it, and this orifice forms an acute angle to the approach of sound. On the extremity of this promontory, there is a growth of hair, which must break and divide sound before it can enter the aerial passage.

5th. At the entrance of this passage there is also a growth of hair, partly strong and in part downy and soft, the former calculated to break and divide sound, and the latter to damp it.

6th. This auditory passage is lined with cerumen, a soft yielding body that must damp sound, and it is also found on the membrane of the tympanum, which consists of three distinct folds, the anterior membrane or fold being a continuation of the cuticle skin of the auricle and auditory canal; consequently sound is as much influenced by all these deteriorating and deranging properties as would be he case in any musical wind instrument, if its anerior surface were lined by similar materials.

7th. In regard to the superior surface of the auricle on which sound is supposed to be collected, t may be remarked that this has no definite formaion; it varies more in different individuals than ny other external part of the human body, and is neither intended to conduct or reflect with consisency, as the ear, like the atmosphere, must transmit sound without change in its original charcter.

8th. Sound, on passing over the Tragus, must in ome cases act mainly on the antehelix, the first projection, and in other cases on the helix or rim f the pinna, according to the degree of elevation n the one or the other, but more commonly on oth these elevations, and must be reflected in rder to reach the concha at the entrance of the uditory canal, the concha being spherical, and in its orm inimical to the preservation of articulate ounds, if we are to judge by external bodies.

9th. This expanded lever with its fulcrum being omposed of the same materials as the windpipe, is owerfully elastic and sonorous, and must reflect regular sounds from its sinuosities and deep recesses.

Were the membrana tympani powerfully sonorous from its tension and extreme attenuation, acon and sound would, as in similar external bodies, e prolonged so as to bring the sound of one leter upon another in speech, and consequently conuse.

The chain of bones in the central ear is diverent in various parts, and incapable of conducting gular sounds, and the two membranous spaces in e bony partition between the central and internal vities of the ear, (termed the fenestra) one being liptical and the other circular, must produce differt sounds; these, together with the small aerial nal which connects them, lately discovered and deribed by M. Savart, and also by Dr Todd in the clopedia of Anatomy and Physiology, are longitudinally transverse to the direction of the nerve of hearing, and the lining of the vestibule and cochlea with which they are connected, must derange sound transmitted in this direction, although by means of their contact with the membrana tympani a slight degree of action in the aqueous fluid in the labyrinth may be produced, and an effect similar to what is experienced when a light current of air brings the sound of the church bell to our ears with increased effect.

Not any of these impediments, however, operate to prevent sound after the atmospheric wave impinges on the pinna, from being conducted to the labyrinth by the solids and denser fluids which compose the organ of hearing, *and are more potent and rapid conductors than common air.* That consonance prevails in this direction is sufficiently proved by the application of the stethoscope to the gristle of the pinna; but the preconceived fancy that air is the predominant agent by which sound must enter this organ and operate upon the membrane of the tympanum, having been indulged and impressed on the mind from generation to generation, is not easily removed, and yet it is of akin to the limited and erroneous notion which so generally prevails, that in order to regulate and economise speech in apartments, it is only necessary to take into consideration the mere form of an apartment, and not the nature and influence of surrounding solids.

SPENCER, THE RIGHT HON. GEORGE JOHN SPENCER, SECOND EARL, was born on the 1st September, 1758, and received the early part of his education under the tutorage of Mr (afterwards Sir William) Jones. After prosecuting his studies at Harrow with great assiduity, his lordship was entered at Trinity college, Cambridge; and in 1778 he took the degree of bachelor of arts. Throughout the term of his intercourse at the university he attracted around him many friends, whose esteem he acquired not less by the dignified tone of his mind than by the generosity of his disposition. Shortly after he left college, he took his seat in parliament for the borough of Northampton, and being connected by association as well as principle with the whigs, his lordship attached himself at once to that party. The moment was auspicious for the display of firmness and ability. The whigs were engaged in a struggle with lord North, and lord Althorp was one of the majority that drove the minister from the power he abused. On the overthrow of that administration his lordship was appointed, in 1782, one of the lords of the treasury, and was re-elected for Northampton, though he was afterwards elected for the county of Surrey, which he continued to represent until he succeeded to the peerage, by the death of his father, in 1783. The state of the public mind upon the progress of events in France a few years after called his lordship into a more important position. The principles that were rapidly growing up amongst the French people were regarded in this country with the utmost anxiety. A change had taken place in the government, and the whigs were again at the opposition side of the House. The whole of the year 1792 presented an unbroken series of alarms. The whigs had become divided upon the wisdom of the measures adopted by the administration; and a section of them considered it to be their duty to support the existing government. Lord Spencer, with the duke of Portland, lord Grenville, and Mr Windham, joined the Pitt administration in

1794. He was appointed, on the 20th of December in the same year, to succeed lord Chatham in the high and important office of first lord of the admiralty, and immediately directed the whole energies of his mind to carry on with vigour the naval operations of the country. The brilliant victories which followed afford the best evidence of the great ability and distinguished success with which he presided at the admiralty. It was in the selection of men for command that lord Spencer exhibited his discrimination and judgment; he called into action the talents of Jervis, Duncan, Nelson, Hood, and Hallowell; and the victories of St Vincent, Camperdown, and the Nile, adorn the naval annals of that eventful period. He was also an enlightened and liberal patron of those ingenious men whose suggestions and inventions have contributed to improve the construction and equipment of ships. Among these we need only mention Brunel, at that time little known, and whose genius he was among the first to perceive in the invention of that beautiful and most effective piece of mechanism the "block machinery." His lordship has all the credit of its erection at Portsmouth: although he left office too soon to see it carried into execution, he introduced Brunel to his successor, lord St Vincent, to whom he so strongly recommended the project, that it was executed in 1802.

In 1801 a change of ministry took place. Lord Spencer retired with his immediate friends, and the Addington administration came into office. He renewed his political connection with lord Grey and Mr Fox, and from that time till the day of his death he continued cordially to support the measures of the whig party. When Mr Fox was called to assume the government in 1806, lord Spencer accepted the office of secretary for the home department. Upon the death of Mr Fox, the administration being dissolved, his lordship's official life terminated. He continued, however, to attend in his place in the House of Lords, took part occasionally in the debates, and when lord Grey came into office at the close of 1830, he gave that noble lord's government his full and entire support. In bibliographical knowledge lord Spencer was justly considered equal to any man of his time; and the noble library which he collected at Althorp and of which Dr Dibdin published a splendidly illustrated catalogue, ranks among the most perfect and valuable of its kind in Europe. He was a fellow of the royal society, and was among the number who established the royal institution, of which he was chosen the first president, and continued so for many years. He was connected with many other societies; and wherever his patronage could be of use in promoting and extending literary or scientific knowledge, it was liberally and munificently given. The Earl married, in 1781, the honourable Lavinia Bingham, eldest daughter of Charles, first lord Lucan, and by her had issue John Charles, lord Viscount Althorp (now Earl Spencer); Lady Sarah, married to lord Lyttleton; the honourable Sir R. Cavendish Spencer of the royal navy, and K.C.H., who died in 1830; Lady Georgiana Charlotte, married to lord George Quin; the honourable Frederick Spencer, M. P., and captain in the royal navy; and the honourable George Spencer, in holy orders in the church of Rome. Surrounded by a family affectionately devoted to him, this venerable nobleman, after a short but severe illness, expired at Althorp, on Monday, the 10th of November, 1834. Though he took a decided [illegible] politics, differed from many of his friends, and accepted office with his former opponents, yet [illegible] were his high character and stainless honour that the probity of his motives was never questioned by those who condemned his decision. In person lord Spencer was tall; in his deportment eminently courteous, affable, and kind. His countenance was thoughtful, and could be severe; but in the circle of his family and friends it was lighted up with a benignity of expression which truly bespoke the benevolence of his heart. His habitual temper was in the highest degree cheerful, enjoying every thing—eager in all its pursuits, and delighted with witnessing the happiness of others.

STOCKTON-UPON-TEES; a town in the county of Durham, situated near the confluence of the Tees with the German ocean, 242 miles from London, and 36 S.S.E. from Newcastle. It is a place of considerable antiquity, though its early history is obscure. It consists of one principal street half a mile long, and several smaller [illegible] streets. It is well paved and lighted with gas. The town-hall, in the centre of High street, is a handsome and commodious building. The commerce of Stockton extends to Holland and the ports of the Baltic, and coastwise to London, Hull, Leith, Sunderland, Shields, &c. The first shipping company established in the port of Stockton [illegible] the name of the "Union Shipping Company"—it was formed in 1822; the second, called the "Commercial Shipping Company"—the third, the "[illegible] Shipping Company"—and the fourth, the "North York and South Durham Shipping Company"—were formed in 1834. These companies have all been prosperous. The manufactures of Stockton and the contiguous district comprehend sail-cloth, cordage, damask, diapers and towelling; there are ship and boat building yards, spinning and corn mills, iron and brass foundries, and several breweries. A railway from Darlington to Stockton was completed so early as 1825, and is of vast advantage to the town; but the Tees has been and is the main source of its progressive prosperity, abounding with excellent fish, such as flounders, eels, smelts, &c.; the principal fishery, however, is that of salmon. The port is a member of that of Newcastle-upon-Tyne, and it was made a bonding port for certain goods in 1813. About three miles from the town are excellent quarries of limestone used for repairing roads; and coal mines exist at the head of the railway. By the municipal reform act passed in 1835, the government of Stockton was vested in a mayor, six aldermen, and eighteen councillors. Population in 1831, [illegible].

STOTHARD, Thomas a distinguished painter and designer in the higher walks of the art, was the son of a vintner in Long Acre, London, where he was born on the 17th August, [illegible]. When he was of a proper age, he was bound apprentice to a pattern-drawer for brocaded silks; but this business so completely declined that, his master having died, the widow gave up to him the last year of his apprenticeship. In this art, however, he had minutely studied nature, in the drawing of flowers and other ornaments; and took every opportunity of improving that knowledge by little trips into the country by both land and water. During his apprenticeship, being a favourite with his mistress, he used to employ his spare hours in making drawings for her; some of which were arranged over the chimney-piece of her parlour. [illegible] in the course of business, a gentleman who saw these drawings was struck with them; and putting some questions as to the artist, was told they were by one of the apprentices, who had made a great number. The gentleman took some of the drawings away with him; and having shown them to a publisher of that day with whom he was intimate, this led to the employment of the young artist in making drawings for the booksellers. Mr Harrison, the well known publisher in Paternoster Row, was, we believe, the earliest employer of Mr Stothard. Many of the engravings for "The Town and Country Magazine," between 1770 and 1780, are from drawings by Stothard, but there is no name to them. Shortly afterwards he became more known by the exquisite little designs he made for Bell's "British Poets," and the "Novelist's Magazine;" some of which procured for him the friendship of his eminent contemporary, Flaxman. Sir Joshua Reynolds also was so struck with his talents that when he was requested by Sir John Hawkins to design a frontispiece for Ruggle's Latin play of "Ignoramus," he said, "There is a young artist of the name of Stothard who will do it much better than I can; go to him."

His designs at this period formed an era in British art, and created a new taste in the public mind. They were also productive of a more laboured and beautiful style of engraving than had till then been seen in embellishments to printed works. Mr James Heath was to Stothard what Bartolozzi was to Cipriani; transferring his designs to copper in a manner worthy of them, preserving the character and spirit of the originals, and at the same time investing them with the grace and brilliancy of a finished work. Most of the embellished volumes published during the last half century were illustrated by the inimitable compositions of this truly poetic painter, and they form a monument, not to his own fame only, but to that of the country which gave him birth. The number of his productions of this class cannot be less than five or six thousand. His series of sketches for "Robinson Crusoe" are among the happiest of all his works of that class, and his designs to illustrate "The Pilgrim's Progress," engraved by Strutt, are singularly beautiful. His illustrations of "Don Quixote" and "Gil Blas" are full of humour. Among the most beautiful of his more recent designs were his illustrations of Mr Rogers's "Italy," in which he could not have been more successful if he had passed his life in that luxurious clime.

The easel pictures of Mr Stothard were few compared with his designs for books and other publications; but they were abundantly sufficient to establish his reputation as a painter. And first, both for originality and character, should be placed his "Canterbury Pilgrims." It was Mr Cromek who commissioned Mr Stothard to paint this fine picture. An engraving from it was made, but the completion of the plate was long delayed. The two engravers originally employed, Louis and Philip Schiavonetti, as well as Mr Cromek himself, paid the debt of nature during its progress; and it was eventually finished by Mr Heath. The painting was afterwards bought by Hart Davis, Esq. A copy, with some variations, was made for a gentleman in Yorkshire of the name of Benson, who also purchased Mr Stothard's "Characters from Shakspeare." The Decameron of Boccacio supplied Mr Stothard largely with the romantic scenes of ladies and lovers strolling, as vagrant fancy or accident directed, amid rustling groves, running streams, and sunny knolls, which were his especial favourites. The largest painting ever executed by him is the grand staircase at Burleigh, the seat of the marquis of Exeter. This splendid work was commenced in the year 1798, and occupied the artist for the four summer months of four successive years. The subject is intemperance; the principal group consisting of Marc Anthony and Cleopatra, surrounded by sylphs, bacchanals, &c. Mr Stothard also designed the ceiling of the advocates' library at Edinburgh; and, among other commissions, he was called upon to furnish designs for the basso-relievos of the grand staircase of Buckingham palace, in which style of decorative ornament no man was better skilled. There is good reason to believe that some of the most distinguished works of English sculpture, produced in Mr Stothard's time, have owed their origin to his designs; and the chasers in gold and silver, particularly those employed by Messrs Rundell and Bridge, and Messrs Green and Ward, were continually indebted to his creative art. In his design for the Shield of Achilles, he evinced a thorough knowledge of early Greece; in his design for the Wellington Shield, the bearing of an English officer is given in the most masterly manner. Of the latter he made an elaborate etching with his own hand. One of the last of his productions of importance was a drawing which he made of the procession of the Flitch of Bacon, which was finely engraved by Mr Watt.

Mr Stothard's style was certainly mannered; but in character and expression truth and nature ever prevailed. He was not without a sufficient skill in colouring; and where bright and vivid tints were required by the nature of his subject, he found no difficulty in producing them. In some of his works there is an evident leaning towards the olden and Albert Durer times of art. Like his friend Flaxman, he was fond of studying the ancient monuments in Westminster Abbey, many of which are in the purest style of composition. Nor does it detract from his merit, or from the character of his genius, that he occasionally transfused the spirit of some of the most distinguished masters into his pictures; for he did so without losing an iota of his own originality and invention. There are not wanting examples among the works of Mr Stothard in which the grace of Raphael, the gaiety of Watteau, and the fire of Rubens, may be unequivocally recognised. His works are of two classes,—those which illustrate poetry and prose, and those which embody his own sentiments and conceptions: the former are the more numerous, but some of the latter are the most felicitous of his pictures, and please us with unlooked-for loveliness, and unexpected beauty. His excellence was the same in every department of composition; whether serious or comic, domestic or imaginative, pastoral or sublime. He never painted pretty pictures to please the eye; his productions always appealed to the mind. Though humour and pathos flowed alike from his pencil, his humour never degenerated into caricature, nor his pathos into affectation or insipidity. There is scarcely an author of any note whose pages he has left unembellished; nor is there any poet whose excellence he can be upbraided for not feeling.

As a man, his character was simplicity itself. He was always liberal in opening the rich stores of his knowledge to all who stood in need of his aid. Never was there a less assuming or more disinterested individual. He hated all collision with bustling arrogant men, and took care to avoid them. His voice was low and not unmusical: he abounded in anecdote; and with those to whom he could unbosom himself was one of the most agreeable companions breathing, for his observations on men and manners were always shrewd and intelligent. He was an early riser, loving to walk into the streets to look at the various classes of the toiling community hurrying to their work: this was one of his places of study; he made sketches of labourers and artisans, singly and in groups; nor did he fail to include flower-girls, and all such moving dealers as London finds employment for.

When young, he studied with great diligence at the royal academy. The first picture he exhibited was "Ajax defending the body of Patroclus;" and the walls of Somerset house were subsequently enriched during a long course of years by his works. He was elected an associate of the royal academy in 1785, and a royal academician in 1794. In 1810 he was appointed deputy librarian; and on Mr Burch's death, in 1812, succeeded him as librarian. On becoming a painter by profession, he took apartments in the Strand, opposite Somerset House, but for above the last forty years of his life he resided at No. 28, Newman street. He died on the 29th of April, 1834, in the seventy-ninth year of his age. He left a large family of children, some of whom have distinguished themselves in the arts.

STOURBRIDGE; a town in the county of Worcester, 122 miles N.W. from London. It derives its name from its situation on the Stour, over which is a bridge, connecting this county with that of Stafford. The manufactures of Stourbridge are considerable, particularly in glass, iron, cloth, and bricks. The glass manufacture was established here when it was first introduced from Lorraine, in 1557. Drinking glasses, window-glass, bottles, and fine stone pots and crucibles of superior excellence are here made. The iron manufactures consist chiefly of the making of nails, agricultural implements, &c.; and the quarterly general meetings of traders in iron are held at Wolverhampton, Birmingham, and Stourbridge, on their respective market days. In the neighbourhood of this place are several mines, which produce coal, iron, stone, and clay; which last, from its use and excellence in the manufacture of glass, is considered the best in the world. At the free grammar-school of Stourbridge, Dr Johnson received the rudiments of his education. Population in 1831, 6148.

STOWELL, the right Hon. William Scott, Lord, judge of the high court of admiralty, was the eldest son of William Scott, a coal merchant of Newcastle-upon-Tyne, and was born in 1745, the year of the Scottish Rebellion, at Heworth, in the county of Durham, his mother having been conveyed to that place on account of the alarm occasioned by the approach of the rebels to Newcastle. Lord Stowell, as did his younger brother John (afterwards the earl of Eldon, and lord chancellor of England), received the rudiments of his classical education at the grammar school in Newcastle. He was graduated, in 1764, A.B. at Corpus Christi college, Oxford; in 1765, was admitted fellow of university college, also the same year appointed a tutor; in 1773, was elected reader of ancient histories; in 1779, he took the degree of D. C. L., and soon after he commenced his career as an advocate in the civil law courts, and rapidly rose to the highest eminence. He was knighted in 1788; in 1798, he became judge of the high court of admiralty; in 1790, he was elected M.P. for Downton, and in 1801, for the university of Oxford, which office he continued to fill till he was called to the house of Lords; and in 1821, he was created a peer by the title of baron Stowell.

In 1828, lord Stowell retired from his station as judge of the court of admiralty, having performed the duties of the office for thirty years with great ability and reputation. He died on the 28th Jan. 1836, aged ninety-one. Devoting his brilliant talents and extraordinary acumen to the noblest branch of his profession, the study of international law, and living in times when a general war called all this knowledge into action, his decisions have passed into precedents equal, if not superior, in authority to those of the venerable founders of the science, Puffendorf, Grotius, Vattel, &c. Lord Stowell was intimately associated with some very eminent men of the past age. In 1778, he became a member of the "Literary Club," which then numbered among its members Dr Samuel Johnson, Sir Joshua Reynolds, and Edmund Burke; and Dr Johnson, just before his death, in 1784, appointed him one of his three executors, the other two being Sir Joshua Reynolds and Sir John Hawkins. Lord Stowell is represented to have been the charm and ornament of every society of which he formed a part.

SUDBURY, formerly called Southburgh, a town in the county of Suffolk, situated on the river Stow. It was the first place occupied by the Flemings, who came over to this country at the invitation of Edward III., and who were the first who introduced the woollen manufactory into England. The town contains three handsome churches, and its houses are tolerably well built. Before the reformation, it had a priory of Benedictine monks, subordinate to the Abbey of Westminster, a priory for canons of the order of St Augustine, founded by Simon, the archbishop; and a hospital for poor people, founded in the reign of king John; but no remains of these ancient edifices are now to be seen. Population in 1831, 4677.

SUGAR (*a.*) The commercial and economical importance of sugar is of modern date. It was known to the Greeks and Romans, as a medicinal substance, but not as food or a condiment. Herodotus informs us, that the Zygantes, a people of Africa, had, "besides honey of bees, a much greater quantity made by men." This was probably sugar, but not brought to a state of crystallization. Nearchus, the admiral of Alexander, "discovered concerning canes, that they make honey without bees." Megasthenes, quoted by Strabo, speaks, 300 B.C., of "India stone, sweeter than figs and honey." Theophrastus, in a fragment preserved by Photius, describes sugar as "a honey contained in reeds." Eratosthenes, also cited by Strabo, and after him, Terentius Varro, are supposed to have meant sugar-canes by "roots of large reeds growing in India, sweet to the taste, both when raw and when boiled, and affording, by pressure, a juice incomparably sweeter than honey."

Near the commencement of the Christian era, sugar was first mentioned under an appropriate name and form. "In India and Arabia Felix," says Dioscorides, "a kind of concrete honey is called *saccharon*. It is found in reeds, and resembling salt in solidity, and in friableness between the teeth

After this, so learned a man as Seneca fell back into fable on this subject. His account is this; "It is said that in India honey is found on the leaves of reeds, either deposited there by the dews of heaven, or generated in the sweet juice and fatness of the reed itself." Pliny, whose special study led him to look more carefully into the matter, gives all that the ancients knew about it, and a little more. "Arabia," he observes, "produces *saccharum*, but not so good as India. It is a honey, collected on reeds, like the gums. It is white, crumbles in the teeth, and when largest is of the size of a hazel-nut. It is used in medicine only." Afterwards Archigenes mentioned it, as "India salt, resembling common salt in colour and consistency, but, in taste and flavour, honey." Galen calls it *sacchar*, and says it was "a production of India and Arabia the Blest." The author of the "Periplus of the Erythræan sea" includes it, under the name of *sacchari*, in a list of articles, constituting the commerce between hither India, and the ports of that sea.

If the assertion, that sugar was used in antiquity as a medicament only, needed confirmation, we might find it in the fact, that the subject is not mentioned except by physicians and men of universal learning, nor with tolerable precision except by the former. None of them allude to any artificial process in the preparation of it. Ælian, about the middle of the second century, is the first who mentions the use of mechanical art in the extraction of the juice of the cane, and he is likewise the first who attempts to fix the seat of its culture. He tells us, that sugar is "honey pressed from reeds, which are cultivated by the Prasii, a people dwelling near the mouth of the Ganges."

The Jewish histories make no mention of sugar. The only sweet condiment, used by the Hebrews, was honey. But it may have been in part "honey made by men;" for the Rabbins understand thereby not only the honey of bees, but also sirups, made from the fruit of the palm-tree.

During several centuries succeeding the Augustan age, no extension of the knowledge or use of sugar appears to have taken place. It is occasionally spoken of, but to the same effect as by the Greek physicians of that age. So late as the seventh century, Paul of Ægineta calls it "India salt," and borrows the description of Archigenes.

At this time a new power appeared on the theatre of nations. The Saracens conquered and occupied western Asia, northern Africa, and southern Europe. Their empire was scarcely inferior to hat of Rome, in the period of her greatest prosperity and rapacity. They pushed their conquests o the Garonne and the Rhone, to Amalfi, and the slands of the Levant and the Ægean sea.

To these ingenious barbarians the world is indebted for the modern manufacture and commerce of sugar. It is not known at what time they hemselves became acquainted with it. Some uthors have asserted, that it was not until the hirteenth century, and that the sugar-cane and the rt of extracting and elaborating the juice were onferred upon the Europeans by the crusaders, or y the merchant adventurers, who penetrated the ndies after the return of Marco Polo. Each of hese assertions has been vaguely received; but a ttle attention will satisfy every inquirer, that either of them is true.

We have seen, that several of the ancients, best cquainted with the subject, couple Arabia Felix with India as a source of *saccharum*. Arabian writers of the ninth and tenth centuries speak of sugar as common in their times. In the year 906, the sugar-cane was cultivated, and sugar manufactured, at Ormuz in Caramania, a province of the eastern Caliphate. An Arabian author of the western Caliphate, who composed a treatise on agriculture about the year 1140, and who quotes another writer of his nation of the year 1073, gives full and precise directions for raising canes and manufacturing sugar. From all which Loudon concludes, that sugar has been cultivated in Spain upwards of seven hundred years and probably as much as 1000 years. Salmasius declares, in 1660, that the Arabs had made our modern sugar more than eight hundred years.

One of the Christian historians of the crusades, in the year 1100, states, that "the soldiers of the cross found in Syria certain reeds, called *canaméles*, of which it was reported, that a kind of wild honey was made." Another, in 1108, says; "The crusaders found honey-reeds, in great quantity, in the meadows of Tripoli, in Syria, which reeds were called *sucra*. These they sucked, and were much pleased with the taste thereof, and could scarcely be satisfied with it. This plant is cultivated with great labour of the husbandman every year. At the time of the harvest they bruise it, when ripe, in mortars, and set by the strained juice in vessels until it is concreted in the form of snow or salt." The same historian relates, that eleven camels laden with sugar were captured by the Christians. A similar adventure happened to Richard Cœur-de-Lion, in the second crusade. A third writer, in 1124, tells us, that "in Syria reeds grow that are full of honey; by which is meant a sweet juice, which, by pressure of a screw engine, and concreted by fire, becomes sugar." These are the earliest notices of the method of making sugar; and they refer to an apparatus and to processes used in the Saracen empire, and not known at that time, so far European records show, to be used anywhere else. At the same time sugar was made at Tyre in Syria, then subject to the Saracens; and, in 1169, that city is mentioned as "famous for excellent sugar."

The island of Sicily was the first spot upon which the sugar-cane is known to have been planted in Europe, although it is altogether likely that it was planted by the Moors full as early, if not earlier, in Spain and Portugal. That island was conquered by the Saracens in the early part of the ninth century, and was retaken by the Normans at the close of the eleventh. Immediately after that event we find, that large quantities of sugar were made there. According to records still extant, William the second king of Sicily, in 1166, made a donation to the convent of St Benedict of a "sugar-mill, with all the workmen, privileges, and appurtenances thereto belonging."

If it was the crusaders who brought the sugar culture to Europe, how happened it, seeing that they were collected from all Europe, that no other part of that continent except Spain in the hands of the Arabs, and no other island of the Mediterranean except Crete, captured in the year 823, by an expedition from Spain, were favoured with that invaluable donation? It was not until three hundred years later, that it found its way into Cyprus, Rhodes, and the Morea; and this extension was not owing to rural tastes, or the spirit of improvement among the feudal barbarians, but to the commercial enterprise of the Venetians, who had for a long time carried on a lucrative trade in the article with India, Syria, Egypt, and Sicily, and were now, by conquest or purchase, the possessors of Crete, and the later seats of the sugar culture above mentioned.

It may be further remarked, that the most important and profitable of the manufacturing arts have never been propagated except by conquest or emigration. The woollen business was established in England by the weavers, fullers, and dyers, whom the frantic tyranny of the counts of Flanders and their French allies drove, and the wise policy of the Henrys and Edwards welcomed, to England. The cotton manufacture, derived to the Arabians from Hindostan, was by them diffused over Africa, and fixed in Europe; and thence brought by an enterprising operative to the United States. It seems scarcely credible, that those half-naked, hard-riding demons, who are so often employed in stripping unfortunate Christians to the skin, are the identical people to whom Christendom is indebted for the comfort of a shirt. Such, however, is the fact. The Arabs conferred upon us that grateful, and now ornamental garment.

It was not until the time of Justinian, five hundred years after silk was known and purchased at enormous prices at Rome, that the silk culture was brought into the eastern empire by two Persian monks, who had pursued it in China. It was established in Italy by a colony of Greek captives, and carried from Milan to Lyons by a company of Italian workmen, engaged by Francis I. Finally, the Huguenots fled from treachery and intolerance to impart their skill to Spitalfield. The silk manufacture is more simple and cheap than that of sugar has hitherto been, and yet it required twelve hundred years to travel from Constantinople to London; and it has but just reached the American shores after two hundred years more.

The use of alkalies, in the clarification of the juice of the cane, was an invention of the Arabs. The original raw sugar of the East was debased by a mixture of mucilaginous matter, which opposed itself to the crystallization of the sugar, and determined it to a speedy decomposition after it was crystallized. To this day the Eastern sugar, except where the manufacture is directed by Europeans, or where the product has been converted by the Chinese into what we commonly call "rock candy," is much inferior to that of the West in purity, and in strength of grain. The only clarification which the liquor appears to have undergone in the hands of the Eastern manipulators, was by skimming during the processes of evaporation and boiling. And, if we may judge from the imperfect and loose descriptions of modern travellers, this is the extent of their knowledge at the present day. They seem to know no other method of clarification in making sugar, and no art of refining except that of making candy.

How the Arabs came to adopt a different method, it is perhaps impossible at this day to determine. Discoveries of this nature do not readily obtain publicity in any country. They are usually involved in as much mystery, and kept under a monopoly as long as possible. Another characteristic of the Arabian method was the use of earthen moulds, of a conical form, for crystallizing and curing the sugar. In the East, broad, earthen dishes were used for those purposes. These two characteristics of the Arabian method have come to us through the Spanish and Portuguese; and whence should they have derived them, except from the Arabs, Moors, or Saracens?—[illegible] names given to the same people, from the relations to places and to people, which they successively sustained. *Arabs* (according to a probable etymology of the word) means western, because the people inhabited the west of Asia. When they had spread over the north of Africa, and conquered the remotest Hesperia of the ancient world, the body of their nation was, in respect to the emigrants, *eastern*, and that is the signification of *Saracen*. *Moors* was a name given to them by the Spaniards and other Europeans, from the circumstance of their having conquered and converted the inhabitants of Mauritania or Morocco, incorporated them with their army, and issued immediately from their territory to take possession of Spain, Portugal, part of France and of Italy, Sicily, and the islands of the Ægean sea.

We have seen, that the Arabs had the art of cultivating the cane, and converting it into sugar. We know that sugar-canes, called "the chief ornament of Moorish husbandry," are still cultivated in Spain, and the manufacture of sugar carried on. It is likewise made in large quantities in the province of Suz, in Morocco; and, at Tegcut or [illegible], constitutes a leading article of traffic with caravans, which traverse the great desert, and send it to Tombuctoo and other markets of central Africa. Sugar is still a production of considerable importance in Egypt, particularly in the district of Fayoum, and until lately, the Seraglio at Constantinople was furnished thence with the nicest refined sugar. In 1560, sugar was imported at Antwerp from Portugal and Barbary. At the same period it was an article of extensive manufacture and traffic at Thebes, Darotta, and Dongola in Nubia and upper Egypt. All these are undoubtedly the remains of the Arabian plantations.

The Spanish and Portuguese word for sugar is *azucar*, *açucar*, or *assucar*, and the Arabic [illegible] or *shuker*. This was derived from the Sanscrit *sharkara* or *sarkara*, meaning, in the primitive, *sweet salt*, and giving rise in antiquity to the Greek *saccharon*, *sacchar*, *sacchari*, *saccharum*, and "India salt." The Arabic *shuker* is, with slight modifications, a universal term, except in China and the Malayan archipelago; proof enough that we received this commodity, and the art of preparing it, from neither of them, and that we and all the western nations are indebted for it to the Arabs, and through them to the Hindoos. The difference between the Spanish and Portuguese word and other European names, is owing to the circumstance that the two nations in close contact with the Arabs, incorporated the article *a* or *al* with the substantive, before which they heard it, as they did in a great many other instances, *algodon*, for example, which is properly *godon*, *goton*, or *koton*. The etymology of *melasses* will further illustrate our position, that we derived the art of sugar making from the Spaniards and Portuguese, and through them from the Arabians. *Melasses*, more frequently but incorrectly spelt, *molasses*, is an abbreviation of *mel de assucar*, signifying, in Spanish and Portuguese, *the honey of sugar*.

The Portuguese, under the auspices of Don Henry, transplanted the sugar-cane from Sicily, as it is commonly supposed, though it might be from Portugal itself, to the islands of Madeira and St. Thomas. Herrera has raised great doubts of the historical correctness of the idea, that Sicily was resorted to at that time for sugar-canes. He declares positively, that they were carried to the Africo-Atlantic islands "from Granada, where they had been planted by the Moors."

It has been a subject of much dispute, whether the sugar-cane was introduced into America from Europe, Asia, or Africa, or whether it is indigenous there. The former is the opinion of all the historians of the old world, the latter of all the explorers of the new. Edwards reconciles them by supposing that both are true, which seems to be the most reasonable conclusion. It would be as absurd to suppose, that the early European settlers of America would fail to carry that plant, with whose great value and agreeable uses they had just become well acquainted, to their new abode, especially when they were growing and were worked up in great quantities in the Canaries, whence all the adventurers were accustomed to take their departure, as it would to question the authority of the writers, who positively affirm this fact. On the other hand, it would be an extravagant stretch of incredulity to doubt the clear testimony of the many eye-witnesses, who declare, that they found native sugar-canes in Guadaloupe, St Vincent, Brazil, on the La Plata, and on the Mississippi; or the demonstration of Cook and Bourgainville, who brought a native and valuable variety from the Friendly Islands to the British and French West Indies.

It is asserted by some, that the plant was carried from Brazil to St Domingo, having been previously brought to the former from the Portuguese kingdom of Angola, where it is still cultivated, or from the Portuguese possessions in Asia, where Vasco de Gama and his successors, the conquerors of a great part of India, found sugar in abundance. Whencesoever the sugar-cane came to St Domingo, or whether it came at all, it is certain, that a company of sugar makers were carried from Palm Island, one of the Canaries, to establish the manufacture in that oldest, except Brazil, of the American settlements.

It is an interesting fact, that the art of sugar making, propagated, we must conclude, both *east* and *west* from Asia, now completed, in opposite directions, the circumnavigation of the globe; for, a few years after this establishment in St Domingo, Cortez found, that both sirup and sugar were made from the stalks of maize, by the natives of Mexico, and sold in their markets. The aborigines of Virginia, and probably of all North America, had the knowledge of making sugar from the juice of the maple. From them the Anglo-American settlers undoubtedly derived it.

In 1643, the English began the sugar-business in Barbadoes, and, in 1648, the French, in Guadaloupe. The Dutch, expelled from Brazil, where they manufactured sugar in the sixteenth century, took refuge in Curaçoa, St Eustatia, and other islands, and finally, upon the exchange of New Amsterdam for English Guiana, in Surinam. To all these they transferred a branch of industry, which they had learned to practise, and knew how to appreciate.

It is not known at what time the use of sugar began in England. It was probably as late as the fourteenth century. At that time it begins to take, in trope and verse, the place which honey had occupied, without a rival, since Moses and Homer. Chaucer uses the epithet "sugreed over." The chamberlain of Scotland, in 1329, speaks of loaves of sugar sold in that country at one ounce of silver, or about eighteen shillings per pound. In 1333, white sugar appears among the household expenses of Humbert, a nobleman of Vienne, and it is mentioned by Eustace Deschamps as among the heaviest expences of housekeeping. George Peale tells us, that sugar with wine was a common drink in the sixteenth century. It did not become an article of ordinary consumption until the beginning of the seventeenth century. At that period, the Venetians imported it from Sicily and Egypt, and probably produced it in Cyprus, Crete, and the Morea. One of their countrymen, about two centuries before, had invented the art of refining, for which he received the sum of 100,000 ducats, equal to three or 400,000 dollars at the present time. Previously to this they had pursued the Chinese method, and made candy only. This inventor adopted the cones from the Arabians, and probably obtained from their manner of clarification the idea, upon which he so far improved as to effect at last the complete purification of his product. It was from the Venetian refineries, that France and England procured their small and high priced supplies in the fourteenth and fifteenth centuries.

By the creation of sugar plantations in the Portuguese and Spanish islands of Madeira, St Thomas, and the Canaries, the stock was considerably increased. We begin then, for the first time, to have accounts of the number of sugar mills, and the quantities manufactured. Thus we are told, that in the island of St Thomas there were, in 1524, seventy mills, making on an average 66,428 lbs. each, and upwards of 2000 tons in all. It was from those islands, that Europe was for half a century mainly supplied. But the rapid exhaustion of the soil seems inseparable from the cultivation of the cane with the labour of slaves and serfs. It is reasonable to suppose, that this was the great cause of the successive migrations of this business westward, and its early decline in Sicily, Spain, and the Africo-Atlantic islands.

In St Domingo there were, in 1518, twenty-eight sugar presses. In about half a century, this island succeeded to the inheritance of the markets of Europe, which it monopolized and enlarged during a century and a half, exporting 65,000 tons in one year, being about 100,000,000 lbs. surplus, after supplying the demand of the mother country. In any possible situation of that island, it could not have maintained until this time that monopoly, and that rate of production. At the beginning of the present century, the entire exportation from the West Indies and American settlements of every description, was 440,800,000 lbs; now it is 400,000,000 lbs. from the British West Indies alone, and 700,000,000 lbs. more from Brazil and the Spanish, French, Dutch, and Danish colonies. In 1750, only 80,000,000 lbs. were exported from the British West Indies, one fifth of the present export.

Of course the consumption of sugar has greatly increased during the last half century; and it seems destined to an indefinite extension. It is so nutritive, wholesome, and agreeable, that there can never be a limit to its use except in a prohibition or an inability to buy it. Men and nations differ widely in their tastes and habits in respect to most kinds of food, sauce, and drinks. Neither wheat, rice, flesh, nor potatoes can command unanimous favour. No article of house keeping, save sugar, can be named, which is universally acceptable to the infant and the aged, the civilized and the savage.

The population of the British West Indies is equal to that of Cuba; but their consumption of sugar was, in 1827, only 13,000,000 lbs., eighteen pounds to an inhabitant, while that of Cuba was, in the same year, 44,000,000 lbs., or sixty-three lbs. to an inhabitant. This difference is presumed to be owing to the predominance of the free over the slave population, in the latter island. The ratio of the free population of Cuba to the slave, is three to one; but in the British West Indies, one to three. This proportion would give the difference of the quantities of sugar consumed, with almost entire accuracy.

The population of all the sugar growing countries in the world is about 468,000,000. It is not to be presumed, that each individual of this number consumes as much as the luxurious West Indian; but it will not be extravagant to suppose, that they all consume as largely as the Mexicans. Mexico, by the lowness of wages, and the ignorance and poverty of the mass, may be considered as a fair representative of the nations inhabiting that belt of the earth, which produces sugar-canes. She consumes, according to M. Humboldt, ten pounds to an inhabitant, all of domestic production. We thus determine proximately, that the consumption of the other Hispano-American nations, and of the swarms which people the East, is 5,000,000,000 lbs. per annum, nearly four times as much as is used in Europe and the United States. Great Britain consumes 400,000,000 lbs., about twenty-four pounds to each inhabitant; the United States 200,000,000 lbs., sixteen pounds to an inhabitant. In Ireland, the consumption is 40,000,000 lbs., five pounds to an individual. In Russia, it is much less, being but a little more than one pound to a person, and 60,000,000 in the whole, unless the article be introduced inland from China, by way of Kiachta, as to some extent it probably is. Of the quantity consumed in Russia, we suppose 8,000,000 lbs. to be beet sugar. Belgium consumes 30,000,000 lbs., seven pounds to an inhabitant, of which 5,000,000 lbs. are beet; and Prussia, Austria, and the rest of Germany, 200,000,000 lbs., of which 20,000,000 lbs. may be beet. This is four pounds and a half to an inhabitant. Holland consumes 50,000,000 lbs., sixteen pounds to an inhabitant; Spain, the same, which is but four pounds to an inhabitant; France, 230,304,549 lbs., seven pounds to each inhabitant. Of this, 107,905,785 lbs. were, in 1836, made from beet-root. With the exception of a few manufactories in Italy, the above figures show the extent of the beet-sugar culture. Thus we have, for the total consumption of sugar in Europe, 1,267,000,000 lbs., of which 140,000,000 or 62,500 tons, are beet sugar; and, for the total consumption throughout the world, 6,267,000,000 lbs.

It is now nearly a hundred years since Margraff, a Prussian chemist, residing at Berlin, made the discovery, that the beet contained a good crystallizable sugar. His attention was first drawn to this subject by the saccharine taste of the beet, and the crystalline appearance of its flesh, when examined with a microscope. Having cut the beet into thin slices, he dried perfectly, and then pulverized them. To eight ounces of the powder he added twelve of highly rectified spirits of wine, and exposed the mixture to a gentle heat in a sand bath. As soon as the liquid reached the boiling point, he removed it from the fire, and filtered it into a flask, which he corked up, and left to itself. In a few weeks, he perceived that crystals were formed, which exhibited all the physical and chemical properties of the sugar-cane. The alcohol still contained sugar in solution, and a resinous matter, which he disengaged by evaporation. Having submitted several other vegetable substances (as parsnips, skerret, and dried grapes) to the same treatment, he obtained sugar from each. In 1747, he addressed to the academy of Berlin a memoir, entitled, "Chemical Experiments, made with a view to extract genuine Sugar from several plants which grow in these Countries."

Margraff solved the important problem, that genuine sugar was not confined to the cane. After this, he enlarged and varied his experiments, he did not invent means of making sugar from the new material on a scale sufficiently large to render it an object of interest to capitalists. Yet he seems to have had a prescience, that his discovery would one day assume importance. He commended it to the attention of the Prussian cultivators, and particularly the small farmers, as offering a new and beneficial branch of agriculture.

Margraff died in 1782. He was a member of the academy of Berlin, director of the class of natural philosophy, and fellow of the academy of sciences at Paris. His works were collected and published in two volumes, octavo, in French, [illegible]. A German translation was published at Leipsic, the following year.

It was Achard, also a chemist of Berlin, who discovered the method of extracting the sugar from the beet on a large scale, and at a moderate expense. He first announced this result in [illegible]. In 1799, a letter from him was inserted in the *Annales de Chimie*, in which he detailed his method. He there states the cost at twopence the pound of Silesia,—or about threepence the pound avoirdupois,—without counting the benefit to be derived from the residuum. He also expressed the opinion, that, with these included, and with some improvements in the process, the sugar might be produced at half that price. The announcement caused a great sensation in France. It engrossed the attention of the Parisian world, eliciting, alternately, ridicule and admiration. The high price to which sugar had risen in France, in consequence of the capture of nearly all her colonial possessions, gave something more than a speculative and passing interest to the ideas of Achard. The National Institute appointed a commission to examine the subject. The result of their investigation was, that the cost of raw sugar of the beet would be eightpence a pound. The price of sugar was such, that even at that rate a very large profit might have been cleared; but this consideration was not sufficient to induce many persons to take the risk of a peace with England, supposed at that time to be approaching. Only two establishments were formed; one at St Quen, and the other at Chelles, in the environs of Paris. Both of these were failures; partly from the bad quality of the beets, and partly from the ignorance and inexperience of the conductors and workmen. With these went down the high hopes, which had arisen, of this new branch of industry in France.

It is difficult to say, whether these hopes would ever have been resuscitated, if political events of an overruling nature had not supervened. By the Berlin and Milan decrees, all colonial articles were prohibited, and that famous "continental system," so wide and wild in its design, but so important and permanent in its effects, was established. From that time, 1806, chemists and economists applied themselves with renewed zeal to the search after an indigenous source for the supply of sugar. It was thought, at one time, that the desideratum had been attained in the production of grape sugar, or sirup; of which, in the course of two years, many million pounds were made. This sugar, although very abundant in some varieties of the grape, raised in a southern latitude, possesses only two fifths of the sweetening power of the cane and beet sugar. Nevertheless, sugar being at about four shillings a pound, a great number of manufactories were erected, and science and industry were tasked to the utmost, to improve the processes, and to bring it to perfect sugar.

In this state of things, it was announced, that beet-sugar manufactories had been all along carried on successfully in Prussia. It was declared, that from 4 to 6 per cent. of sugar was obtained from the beet, besides several other valuable matters. Other German chemists had instituted experiments and published results substantially the same as Achard's. At length, in 1809—10, experiments were recommenced in France, particularly by M. Deyeux of the Institute, who had reported upon he subject in 1800. The experiments resulted in he production of a considerable quantity of sugar, both clayed and refined, which, as specimens, served to revive and increase the confidence of France in this source of supply. No more than 1 o 2 per cent. was obtained; the beets being of a bad sort, and raised in the neighbourhood of Paris, where a vast deal of ammoniacal manure, hostile to the production of saccharine, is used.

In 1811, M. Drappier, of Lille, worked about ifteen tons of beets, from which he obtained 2½ per cent. of sugar. In the winter of the same year, an experimenter at Paris succeeded in obtaining 4½ per cent. from white beets, raised at a considerable distance from Paris, and without any manure. This was the first essay in France, which approximated to the results of Achard. It was made by M. Charles Durosne, and was detailed in the *Moniteur*. It demonstrated how faulty had been their selection of sorts, and the mode of culture. At this time, Achard had published in German an extensive work, in which he had treated with minuteness every department of the business, from the raising of the seed to the refining of the sugar. This treatise contained not only Achard's experience of thirteen years, but also accounts of he manufacture of beet sugar, on a grand scale, by other persons in Prussia. The result of these enterprises, as reported by a commission appointed by the Prussian government to investigate the ubject, was, that in the case presented to their onsideration, 60,800 lbs. of sugar were manufactured from 1,000,000 lbs. of beets, which is 6 pounds 1½ oz. per cent., costing for cultivation and manufacture threepence a pound, and selling at ightpence. The profit was stated at 136 per cent., without reckoning 27,883 gallons of vinegar, worth about £450; 155,400 lbs. of feed for beasts, worth £20; and after deducting £310 for the greater supposed expense of refining beet sugar. This, however, has since been recognised as an rror; beet sugar being in fact the most profitable o the refiner, by reason of the superior strength f the grain, and of the deterioration which the cane sugar undergoes by fermentation and decomposition during long voyages and storages, before it reaches the pans of the refiners. This loss is estimated, in France, at 14 per cent. on East India sugar, and at 7 on West India. The British custom-house allows one per cent. a month for the waste on bonded sugar.

Such was the result of the operations in the manufactory of the baron de Koppy at Krayn, near Strehlen in Silesia.

In January, 1812, Napoleon issued a decree establishing five chemical schools for teaching the processes of beet sugar making, detailing one hundred students from the schools of medicine, pharmacy, and chemistry, to be instructed in those establishments, and creating four imperial manufactories, capable of making 4,408,000 lbs. of raw sugar annually. Munificent premiums were also decreed to several individuals, who had already distinguished themselves by a successful application to this new branch of industry. A considerable number of manufactories were immediately added to those already existing in France; and, in the season of 1813, a large quantity of sugar, both raw and refined, was produced. A notable improvement was introduced by M. Mathieu de Dombasle, a learned and experienced cultivator and chemist. It consisted in applying to the beet juice the colonial process of depuration, appropriately called in France *défécation*. This was in fact very analogous to the improvement which the Arabs effected in the oriental method. Achard used sulphuric acid in this operation, and for the crystallization broad dishes, not unlike those said to be used in China at this day. The colonial process of *défécation* by lime is now nearly universal in France, as is likewise the substitution of the mould or conical pot, for the crystallizers of Achard.

Such was the prosperous condition of this manufacture, when the disasters of Moscow brought upon it an uncertain political future, that bane of all great industrial enterprises. Confidence and energy gradually yielded to fear and discouragement. A faint and fitful struggle was maintained during another year, until the Cossacks, quartered in the sugar-mills, and the allied artillery, seizing upon the beasts that moved them, gave the manufacturers the *coup de grace*. The officers billeted at their houses became from curiosity their principal customers, being struck with the brilliancy and purity of this unexpected product. After the final overthrow of Napoleon at Waterloo, the price of refined sugar settled down at 6d. a pound, and raw at 3½d. Still, to the surprise of all, two beet-sugar manufactories did survive the shock of this tremendous reverse, more useful to this industry, and to mankind, than all its preceding prosperity; because it demonstrated, what never could have been done under the unnatural stimulus of the "continental system," that there was an intrinsic value in the new industry, rendering it capable of independent existence, and raising it out of the reach of accident, political enmity, or caprice. The establishments which survived were at Arras, in the department of the Pas de Calais, and at Pont à Mousson, near Nancy, in the department of the Meurthe.

After the retirement of the allied troops, in 1818, the government began to turn its attention to the encouragement of an industry, which had struggled meritoriously and successfully to preserve a boon to the French nation. Many eminent and public-spirited citizens raised up establishments, more perhaps to give the benefit of experiments to their countrymen, than with a view to profitable investment. Men of genius and profound research occupied themselves with elaborate experiments, and published their results. Among the most important were the Count Chaptal, who detailed, in Memoirs on the subject, and in his "Agricultural Chemistry," the experience of many years as a cultivator of beets and manufacturer of sugar; and M. Dombasle, who did the same, with admirable clearness and precision, in his work entitled "Facts and Observations relating to the Manufacture of Beet Sugar." As an intelligent and industrious operative, M. Crespel Delisse, of Arras, is worthy of honourable mention. This gentleman was originally a labourer. He became the foreman of the first beet-sugar manufactory at Arras. The proprietor, who had invested an immense capital, sank in the general wreck of 1814—15. M. Crespel succeeded him, with the great advantage of having his fixtures at about one fourth of their real value. This was one of the two establishments which survived.

The method in general use in France is to crush or grind the beet with an instrument called a *rasp*, though its functions would be better described by the word *grater*. It is cylindrical, and revolves four hundred or more times in a minute. This reduces the beets to a very fine pulp. They are then pressed in hydraulic presses of great power, and the juice defecated, evaporated, boiled, and filtered, in very much the same manner as the cane-juice in the colonies. The great difference is, that the beet-sugar machinery has been rapidly improved, and the cane planters have begun to avail themselves of the improvements. There is, however, another method of extracting the saccharine, which dispenses altogether with grating and pressing. This is called *maceration*. It was first proposed by Dombasle, and has been tried in various forms, with more or less success. M. Martin de Roclincourt, originally a captain of engineers, is the inventor of an ingenious and valuable machine for performing this operation. The beet is first cut into ribands, about one line in thickness. They are then plunged in boiling water, which is admitted into the machine at regular intervals, in regular doses. The ribands remain passing through the circuit of the machine during one hour, and steam is occasionally admitted to keep up the heat. In this time, the sugar contained in the ribands is dissolved, and remains in solution in the water, while the ribands, now called pulp, are discharged on the side of the machine opposite to that where they entered it; the liquor containing the saccharine flows off in another direction to the defecating pans.

This method is employed to a considerable extent in France, but by no means so generally as the rasp and press. Its advantages are, that it gives rather more and a rather better product, and requires a great deal less labour. Its disadvantages are, that it takes a great deal more fuel, and does not leave the pulp in so good a taste for feeding; there being too much water in it, and less saccharine, than in that which comes from the press. It might be subjected to pressure, by which a little additional liquor would be obtained for the pans, and the pulp made vastly better for feeding. This, however, would require so much power of the press, and so much pains, that the French generally feed with the pulp just as it falls from the machine. We have little hesitation in giving the preference to this method in a country where fuel is cheap and labour dear. The immense establishment commenced in London in 1837, but abandoned in consequence of the excise of 2½d a pound, which the government hastened to impose in order to guard the West India interest, was upon this system. On the other hand, the only other beet-sugar manufactory, upon a scale of any importance, in Great Britain and Ireland, which is situated near Dublin, has adopted the rasp and press. The former establishment delivered for consumption a considerable quantity of beautiful refined sugar, which was so completely undistinguishable from refined cane sugar, that the government issued an extraordinary notice, that any found in the exportation of it with the benefit of drawback would, if detected, be punished with the utmost severity. Whether the establishment in Ireland still exists, we are not informed. It is, however, the opinion of persons skilled in the manufacture and refining of sugar, and who have had small experimental beet-sugar factories near London, that the business cannot be sustained under a duty of 2½d. Others are confident, that, in consequence of the application of the fibre to paper-making, by which the value of the pulp is enhanced fourfold, the business will yet get a permanent footing in Great Britain. We do not think a fair experiment has yet been made in this country.

The great desideratum which the French manufacturers of beet-sugar have always felt, and have been striving to supply, has been at length attained: a method has been discovered by which the beet is deprived of all its saccharine, be the same more or less, and this matter is obtained and operated upon in such a manner as to be nearly all in a crystallizable state. Hitherto, about 30 per cent of the saccharine has resulted in molasses. The residuum is of comparatively small value, and every thing which arrests the formation of it, adds by so much to the deposit of sugar, and to the profits of the proprietor.

M. Schuzenbach, a chemist of Carlsruhe, in the grand duchy of Baden, is the author of this important improvement. Having obtained his results in the laboratory, he communicated it to distinguished capitalists in Baden, who thereupon formed a company; not with a view, in the first instance, of erecting a manufactory upon the new system, but merely of proving its pretensions. To this end, they advanced a considerable sum for setting up experimental works so large, that the test could be tried on a manufacturing scale. Having done this at Ettingen, near Carlsruhe, they appointed a scientific and practical commission to follow closely the experiments which M. Schuzenbach should make. Commissioners from the governments of Wurtemberg and Bavaria likewise attended. The experiments were carried on during five or six weeks, in which time several thousand pounds of sugar, of superior grain and purity were produced.

The Baden company were so well satisfied with the Report of the commission, that they immediately determined to erect an immense establishment, at an expense of £43,000 for fixtures etc. A like sum was devoted to the current expenses of the works. Factories were simultaneously erected at or near Munich, Stuttgard, and Berlin. The arrangements were made with remarkable intelligence and caution; and we cannot doubt the

the new method will prove of immense importance to the prosperity, comfort, and improvement of the northern nations and colonies of the Old World and the New.

SWANSEA; a town of South Wales, in the county of Glamorgan, 206 miles W. from London, and 86 W. by N. from Bristol. It is situated on the west bank of the Taw, near the beautiful natural basin called Swansea Bay, which here opens into the British Channel. The tide rolling over and retiring from an extensive beach of level and firm sand, affords great facilities for bathing, which have been duly appreciated both by residents and strangers. The town has only risen into importance within the last thirty or forty years. It is about two miles long, including the suburb of Greenhill, and half a mile broad, and a great proportion of the houses are well built. The chief lodging houses for bathers are at Mount Pleasant and the Burrows. Swansea castle, a portion of which still remains in the middle of the town, was founded by Henry Beaumont, earl of Warwick, who, after the manner of the Norman freebooters, made a predatory war upon the sons of Caradoc ad Jestyn, prince of Gower. After the subjugation of Gower, Beaumont transplanted hither a colony from Somerset, to whom he gave grants of land, and whose descendants still continue distinct from the original inhabitants both in language and manners, and with whom, like the Flemings in Pembrokeshire, they seldom intermarry. The Duke of Beaufort, the present lord of Gower, is proprietor of Swansea Castle. The smelting of copper forms a principal trade at Swansea, and the inexhaustible supply of coal causes ore to be shipped for this place from different parts of Cornwall, Wales, and Ireland. Here are copper-works, iron-foundries, and potteries; ships are built and repaired here, which has occasioned the establishment of roperies, and other consequent trades. Tanneries, breweries, and soap manufactories are conducted upon extensive scales. The surrounding district is replete with mineral wealth. It contains veins of bituminous and stone coal, and culm; limestone is raised in great abundance; besides which, brick and fire-clays, rotten-stone, iron-ore, and other mineral substances appear in large quantities. A number of the population find employment in the coal trade. The coals are conveyed to the town and harbour by means of canals, and a rail-road passes along the shore from the pier to the Mumbles. The harbour of Swansea is one of the most beautiful and secure in the kingdom. On the western pier are a watch-house and lighthouse, with a spacious terrace. Population in 1831, 13,694.

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TALLEYRAND, Prince. Charles Maurice de Talleyrand Perigord, was born at Paris in 1754. He was descended from one of the oldest and most illustrious houses of France, which, during the middle ages, were lords of the district of Quercy; and at an early age, as a younger brother, was destined for the church. His ecclesiastical education was formed at the seminary of St Sulpice, and his talents for public business were already so strongly developed, that in 1780 he was named agent-general for the clergy. In 1788 he was consecrated bishop of Autun, and the year after was elected deputy of the clergy of his diocese to the states-general. At that momentous period Mirabeau perceived the extent of his abilities, and signalized him as one of the most powerful and versatile of the men of genius who then abounded in Europe. He proposed several important measures to the States, among others the suppression of tithes and the appropriation of the property of the clergy to the wants of the public treasury. In 1790 he was named president, and in the same year officiated at the altar in the Champ de Mars on the day of the National Federation. He subsequently consecrated the first constitutional bishops, and for this was excommunicated by pope Pius VI. His resignation of the bishopric of Autun, and his election as a member of the directory for the department of Paris, followed soon after. He was left by Mirabeau as one of his executors, and in 1792 was sent into England on a secret mission, together with M. Chauvelin, the ambassador. The English administration under Mr Pitt, after favourably receiving the French envoys, subsequently ordered them to leave the country within twenty-four hours. M. de Talleyrand returned to Paris, the day after the 10th of August, and was indebted to Danton for a narrow escape from assassination. He then left France for the United States, and remained there, engaged, it is said, in commercial speculations, till 1796, when he was recalled by a decree of the Convention. In 1797, after the 18th Fructidor, he was appointed Minister of Foreign Affairs, and supported with the most imperturbable *sang froid* the attacks made against him by all parties. Two years afterwards the 18th Brumaire occurred. Napoleon became First Consul, and M. de Talleyrand continued as foreign minister. In 1802 a brief from Pius VII. released the ex-bishop of Autun from his ecclesiastical ties, and he shortly after married Madame Grandt, of Hamburg. The rivalry of Fouche and M. de Talleyrand then followed, and to the ultimate advantage of the latter, who, on Napoleon becoming emperor in 1806, was elevated to the rank of prince of Benevento, and grand chamberlain of the empire. The next year he was succeeded as minister by M. de Champagny, duke de Cadore, and was named vice-grand elector; but from this period his alienation from Napoleon may be dated; he disapproved of the emperor's aggressions in Spain; and in 1814 was appointed president of the provisional government of France, until the arrival of the Comte d'Artois. He was French commissioner at the congress of Vienna, and on the final return of Louis XVIII. in 1815, he resumed the portfolio of foreign affairs as president of the council, but resigned before the end of the year, from his disapprobation of the tendencies of the government. From this period he remained near the person of the Sovereign in virtue of his title as chamberlain, and ultimately became the leader of the opposition in the chamber of peers. The revolution of 1830 found him, though advanced to a venerable age, not too old for the service of his country, and he proceeded to London as ambassador, where he remained till 1835. After this time the prince has rested under the shadow of his diplomatic laurels, ample enough to include within their branches the treaties of Amiens, of Luneville, and of the quadruple alliance.

The nature and the great gift of Talleyrand was to perceive where power and influence were likely to centre. Even in the turmoil of revolution he was still the courtier, aiming at effecting nothing himself, by either study, or eloquence, or labour, but seeking to fasten on the greatest personal character of the moment, in order through him to wield influence. He first attached himself to Mirabeau, whose executor he became. His secret mission to England, under Chauvelin, followed. But the times became far too menacing and troubled for such spirits as Talleyrand, possessed of more finesse than force, to live or prosper in; and he wisely turned his back upon Europe until the combat of brute force should have terminated, and the stage be left once more open to those qualities and powers which he possessed. He returned to France under the directory. The utter instability of an executive without talent, honesty, or honour, soon induced him to look out for one of those master spirits under the shadow of whose success he might hold more durable and honourable influence. He chose Napoleon, and contributed by his councils to the revolution of the 18th Brumaire. From that period M. de Talleyrand was foreign minister of France, during seven or eight of the most important years that ever occupied diplomacy. He was the obedient, the approving minister of the emperor, until the latter had reached the utmost height that arms and policy could bestow. Talleyrand then would have had him rest, telling the emperor that the ascent was over, that he had reached the mountain top of his fame and power, and that further progress must be descent. The restless spirit of Napoleon disliked and spurned the advice. Talleyrand was overthrown, and the first difficulty which the emperor experienced immediately after from the resistance of Spain was pronounced by his ex-minister to be the *commencement of the end.*

At a moment when the military fame of the empire gave way, all eyes turned to M. de Talleyrand in his retreat. His eminence proceeded from his standing almost alone as a French statesman, Bonaparte having extinguished the class and the race. Could Napoleon, indeed, have trusted him, regained his confidence, and so far yielded his imperial will as to enter into his views, France might have concluded other treaties than those of 1814 and 1815. But Talleyrand soon flung himself into the other scale, and was, more than any other person, influential in bringing about the restoration. Except, however, in the negociations which followed immediately the triumph of the allied powers, the prince was able to recover no permanent position or authority.

From time to time, indeed, he made his influence felt, and showed himself in that prominent light which he was ambitious to appear in. But every one perceived, and he persuaded himself, that he was unfit to be the minister of a constitutional government, for which he wanted alike the habits, the character, and the peculiar talents. Considerable obloquy fell on the French government after the three days of July for appointing him ambassador to London. For, whatever might be the purity of his conduct and intentions, prince Talleyrand was considered as the representative of that school of duplicity and selfishness that admits all means to be allowable, provided they obtain their object.

It is remarked in the *Constitutionnel* that "M. de Talleyrand was as eminent for firmness of character as for a comprehensive mind. His powerful influence having been exercised in varying situations, and over destinies the most opposed to each other, and he was naturally charged with having been as changeable as the events of his time. Nevertheless, in the apparently fluctuating character of his existence, one prevailing sentiment may be remarked—an unalterable attachment to the revolution of 1789, and a deep feeling of nationality, for few men have felt so strong an interest in their country's greatness. On the important occasions on which he was employed, his constant study was to derive some advantage for France from the difficult situations which were not his own work, and no man was more capable of turning them to better account. His rare firmness of character, and his imperturbable *sang-froid*, enabled him to assume over others at least some portion of the empire which he exercised over himself. It was impossible to exert more influence over an assembly of diplomatists than that for which Talleyrand was indebted to his superior mind, his infinite resources, and the elegance of his language. To give an idea of the effect produced by his style, which after him will probably find no efficient imitator, we may compare his conversation to the prose of Voltaire. He frequently gave way to a natural *nonchalance*, and on such occasions spoke but little; but when he at length shook off this mental indolence, his conversation was enchanting. His habitual chit-chat tone was one of graceful levity that skimmed lightly over the surface of every subject, but which, when serious business was the theme, gave way to an extraordinary depth and force of reasoning. It has been often imagined that he lived, as it were, only intellectually, and that his heart found no room for the feelings of affection; but those who were admitted to his intimacy know that his kindness was unequalled, and that its expression not unfrequently penetrated even through the immoveable features which disconcerted so many able negotiators."

Talleyrand died after a few days' illness at Paris, on the 17th May, 1838, and received a public funeral. During his illness, he was visited by the king of the French, and other distinguished personages. His brother, the duke Archambault de Talleyrand Perigord, and the father of the duke de Dino, died on the 28th of April, in the year 1838, at St Germains, aged [illegible].

By the will of Talleyrand, he prohibits his heirs from publishing his Memoirs before the lapse of thirty years, and declares that he dies in the Roman Catholic faith. Prince Talleyrand was invested with most of the [illegible] orders of Europe. He was a Knight of the Holy Ghost, Grand Cross of the Legion of Honour from its first creation in 1805, a Knight of the Golden Fleece, Grand Cross of the Orders of St Stephen of Hungary, the Elephant of Denmark, Charles III. of Spain, the Soteer of Greece, the Sun of Persia, the Conception of Portugal, the Black Eagle of Prussia, St Andrew of Russia, the crown of Saxony, and St Joseph of Tuscany. It has been remarked as singular that, notwithstanding he took an active part in the formation of the constitutional government of Belgium, he had not received the Order of Leopold. He was a member of the Académie des Inscriptions et Belles Lettres, and the Académie des Sciences Morales et Politiques.

TANNING, (*a*.) The bark used for tanning is the bark of the oak, though many other substances contain the tannin principle. The outside roughness of the bark, which is called the crut, is first taken off with a large drawing-knife; and after the crut (which is not employed in tanning) is removed, the bark is dried in a kiln and ground in a mill; the bark thus ground is then mixed with water in the pits, and forms what are called the woozes. The term *hide* is applied to the skins of horses, oxen, and cows, which are intended for sole leather and other substantial purposes, and the term *skin* is limited to the skins of calves, seals, and other animals, from which a thinner and more flexible leather is made. When hides are brought to the tanner, the stoutest parts of them are selected to make butts or backs, which are for the sole-leather of very thick shoes. Ox and cow-hides are called crop-hides, and are also used for sole-leather. The first process used towards the skins of horses, oxen, &c. is to soak them in water for a few hours to get out the blood, and they are then put into pits containing lime and water, where they remain ten days or a fortnight, being taken out and in two or three times a-week: after that they are taken out and put across a beam, which is a piece of wood rather convex on the upper side, about three feet broad, and four and a half in length, one end of which rests on the ground, the other end being supported on legs at a convenient height for the workman, who spreads the hide on it, and takes the hair off with a blunt kind of drawing-knife, called a working knife, which is curved to suit the form of the beam; this being completed, the hides are "fleshed," that is, the fat, &c. is all removed from the inside of the hide with a double-edged drawing-knife, called a flesher. The hides are then put into a weak wooze, and frequently handled, *i.e.*, drawn in and out of the pit to prevent creases, and that they may thoroughly imbibe the tanning principle: from this weak wooze they are removed gradually to woozes stronger and stronger. The same woozes are used for many hides in succession. The pits in which the woozes are contained are usually about seven or eight feet long by four broad. From six to eight months in all are sufficient to complete the tanning of the commonest kind of sole-leather, called *crop* by the trade. After being taken from the pits, crop-hides are hung up to dry, in an airy shed or loft, and when fully dried, after a very slight dressing with a sort of scraper, are fit for the market, and for their purpose. They are of a brownish-white appearance, wrinkled in the grain and a little rough on the other or flesh side, and are generally (at the thickest) between a quarter and half an inch in thickness. From the combination of the tanning with the gelatin of the hides, they are rendered strong, yet flexible, and unputrifiable.

When it is wished to make cow-hides into a stronger kind of leather, called *bend*, the tanning process is carried on for a longer period. As bend is the strongest of sole-leather, the thickest and best cow-hides are selected for the purpose of making it; and nearly a year's immersion, in various ways, in the tan liquors, is necessary for its manufacture. The cow-hides applied to this purpose, after being tanned for that time, are not simply dried for the market like crop, but are beaten, when they are dried, into a firm consistence, so that a piece of bend looks like a polished pebble on being cut. The instrument with which bend is beaten is a broad brass hammer. From being so long in the tan-pits, the colour of bend is a deep brown.

Such is the manner of procedure, when it is wished to convert cow-hides into the two principal forms of leather used for the soles of shoes. Cow-hides also form the upper or black leather of strong and coarse shoes. The weakest and smallest species of cow-hides are generally appropriated to this purpose. After being removed from the lime-pits, and denuded of the hair, they are placed in pits filled with a solution of the ordure of pigeons, which has the effect of removing all vestiges of the lime. They are then placed upon a board, called a beam, and "shaven (as it is called) in the bait." That is, the inner or flesh side is shaven with a sharp knife, and considerable slices or portions taken from it, until the operator thinks it reduced to the proper thickness. This process is necessary, as it is obvious that the same degree of thickness will not suit both upper and sole-leather. After getting this primary shaving, the hides are put into the tan-pits, and undergo a steeping, which occupies a little shorter time than that required for crop hides. When the operation, at the end of some six months or so, is over, the cow-hides destined for upper leather undergo a degree of drying, after which they are handed over to the currier, who has to convert them into upper leather. They are given by the tanner to him in a thickish, rough, and somewhat hard state, and of a brown colour, and he has to convert them into the soft, easily flexible, smooth, neat, and black-hued article which they appear when used in shoes.

The currier's first process is to steep them, and then to shave them further with the very peculiar knife which he uses. This is a double-edged knife, with a horizontal handle at each end. The edges of this knife are not straight, but curved, and, therefore, in cutting, the knife is held nearly at right angles to the hide, which is thrown over an upright beam, something resembling an erect tombstone of small size. The workman stands behind the beam, and, holding the knife with both hands, shaves the surface of the hide downwards. The currier's whole task is to shave down the leather, to soften it properly, and to blacken it. He accomplishes the thinning or shaving of it in the way mentioned. The softening is effected by rubbing in grease into it with hard brushes upon a large broad table. In order to let the grease enter the leather properly, the hides are hung up in a greased state to dry. When they are taken down, great care is exerted to take out the superfluous grease by scraping, &c., as the cleanness of the leather would be otherwise destroyed, nor would it blacken well. The last shaving is given after this period, to bring it to the required thickness. The hides are now firm, yet flexible, neat, and clean. The chemical action that takes place between tanning and iron is brought into play finally to black the hides, which is done on the flesh or outer side. The grain side is left always unbroken from first to last. These blackened cow-hides, then, are now fit for making shoes. of the strongest kind, such as are worn by tradesmen who work at coarse work. The name given to these dressed cow-hides is *neat's leather*, from the word neat, which is applied to cattle sometimes.

A considerable quantity of the shoes made for the middle classes of society are formed neither of neat's leather nor calf, but of the hides of cattle between the cow and calf in age. This kind of leather is called *kip*, and is between the two others in quality, being neither so clean and fine as the calf, nor so coarse and strong as the neat hide.

Horse-hides are extremely little used for the manufacture of leather, in comparison with cow and calf-hides, and in truth, the hides of horses cannot be procured in such numbers. But if they could, they would still be less used, for the hide of the horse is comparatively very weak. The hair is limed off, as already described, and the tanning gone through much in the same way as with cow-hides, much less time, however, being required. When the currier gets the tanned horse-hides into his hands, and has shaved them to the proper extent, and softened them with grease, he blackens the grain, and not the flesh side, as in the previous instances. When the currier has finished them, they are called *cordovan* hides, from having been first dressed in this way in the famous city of Cordova. Long ago, a great quantity of light shoes were made of cordovan, but this kind of leather is much less used in this way now-a-days, calf being preferred. for all purposes. The coloured kind of leather, generally known by the name of Morocco, is composed of the dressed skins of young goats or kids.

Calf-skins, and the skins of other animals intended for dressing-leather, are first put into a pit of water to get out the blood, and they are then placed in the lime-water to remove the hair, after which they are steeped in a solution of the excrement of pigeons, in pits called "grainers," to render them soft and to cleanse them from the lime. They remain in these a day or two, and are worked over with a working-knife of the same kind as that used to remove the hair, the object of this being to remove all the small hairs and the filth called the "scud," which is the technical term for the colouring matter of the hair, that of red calves being red; of black ones, black, and the like. When the skins are sufficiently soft and clean they are immersed in the woozes, where they remain three months, more or less, according to the judgment of the manufacturer. Skins are more slowly and carefully dried than hides; and they are pulled out by hand as they dry, to prevent their shrinking, and, when nearly dry, they are doubled up and beaten upon a pin-block by a man holding the skin in his hand and striking it against the pins. The pin-block is four feet in length and two in width. The pins, which are of wood, are four inches in height and an inch in diameter; they are fixed upright on the block, and are placed in rows of eight by eighteen, being 144 in all. The leathers are sorted and put into half dozens, so as to make the weight of each bundle nearly equal. They are sold to the currier, who dresses and blacks them for the upper-leather of shoes and boots, and many other purposes.

Previously to the year 1830 there was an excise duty on leather, but that duty was taken off by an act of parliament passed on the [illegible] of May in that year. Leather imported into the kingdom is, by a statute 3rd and 4th year of William IVth. (c. 56), made liable to a duty of [illegible] per cent. on the value, except in certain cases, which are otherwise specified; and skins which are not dressed are made liable to a duty of 20 per cent. on the value, except the species enumerated in the statue, which are — for a tiger-skin, 2s. 6d.; a lynx-skin, 6d.; chinchilla-skin, 3d.; elk-skin, 1s.; &c.

TAVISTOCK; a town of England, in the county of Devon, situated on the river Tavy, [illegible] miles W. S. W. from London, and 33 S. W. from Exeter. It dates its origin from the erection of an abbey of black monks, commenced by Orgar, Earl of Devonshire, 961, and completed by his son Ordulph, in 981: it was burnt to the ground by the Danes, but was soon after rebuilt and considerably enlarged, and the establishment became more flourishing. From Henry I. it received the jurisdiction of the entire hundred of Tavistock, and the privilege of a weekly market and fair, and Richard Barham, the thirty-fifth abbot, procured from Henry VIII. the right of sitting in the House of Peers, which continued till 1539, when John Peryn, the last abbot, surrendered it to the king. The possessions of the abbey, with the borough and town of Tavistock, were then given to John, lord Russel, ancestor of the present noble proprietor, the duke of Bedford. Various fragments of this venerable structure still remain, but are mostly incorporated with other buildings: these consist of the gatehouse and several complete buildings near it: the refectory is now used as an assembly-room, the boundary-walls may still be traced, and near the canal bridge is an entire gateway. The monastery is remarkable for having contained an institution for the study of Saxon literature at a very early period, and also an ancient printing-press. Here are also some remains of Old Morwell house, formerly the hunting-seat of the abbots of Tavistock.

The manufactures of Tavistock consist chiefly of coarse woollens, but many of the inhabitants are employed in the neighbouring mines, which produce copper, lead, tin, and manganese. A large iron-foundry and tin-smelting establishment are in the town. The Tavy works the machinery of some mills. The Tavistock canal, opened in [illegible], forms a junction with the Tamar about four miles distant. This borough has sent two members to parliament ever since the reign of Edward I. Population in 1831, 5602.

TAYLOR, Thomas, usually called the Platonist, was born in London, in the year [illegible]. At an early age he was sent to St Paul's school, where he acquired the rudiments of classical learning. The elements of science were then, as now, absurdly excluded from the routine of education, but following the bent of his mind to speculative pursuits, he acquired, by private study, a sound knowledge of the theories of arithmetic, algebra, and geometry. He was next placed under the care of the Rev. Mr Worthington, of Salters' Hall Meetinghouse, to be qualified for the office of a [illegible] senting minister; but troubles arising from an early marriage, disgusting him with his tutor and his vocation, he became an assistant at a boarding school, and for many years endured patiently the pressure of incessant toil and narrow circumstances. The love of mysticism and metaphysical subtility, by which he was ever distinguished, was first displayed in an essay on "A new Method for Reasoning in Geometry." The metaphysical view of mathematics which he adopted, led him to the study of the old Greek philosophers. He began with Aristotle, and proceeded to Plato, whose sublime speculations at once rivetted his affections. While engaged in the study of the academic philosophy, he accidentally met with the works of Plotinus, and read them, as he himself informs us, "with an insatiable avidity and the most rapturous delight, notwithstanding the obscurity of that author's diction, and the profundity of his conceptions." He next studied the commentaries of Proclus, and read them through thrice—a task, it is thought, never performed by any other man. The generous patronage of Messrs W. and G. Meredith enabled him to publish the "Orphic Hymns," and some other Platonic fragments. He next translated "Plotinus on the Beautiful," a work of singular obscurity; and Proclus's "Commentary on Euclid," in which there is much ingenious mathematical research, mingled with the wildest speculations of the Alexandrian school. These were followed by translations of the Platonic Sallust; of the Pythagoric Sentences; some Hymns of Proclus; two Orations of the Emperor Julian; and five books of Plotinus, with very copious notes and illustrations. The mere titles of these translations will suggest, what a closer examination of them would prove, that Mr Taylor was not so much a Platonist as a Neo-Platonician; that he followed less the pure doctrines of the academy, than their extension by the school of Alexandria and the Sophists. The compound of all eastern and western metaphysics preached by the later Platonicians, patronised by the emperor Julian, and advocated by the Sophists, as a rival to Christianity, is really the Platonic system developed by Mr Taylor. His admiration of these writers was unbounded; and his enthusiasm was not at all abated by finding himself alone in his worship. The most laborious of Mr Taylor's tasks was a translation of Pausanias, in three volumes, for which he received only sixty pounds! It must, however, be said, that his notes illustrate neither the topography nor the history of this valuable description of ancient Greece, but are devoted to mystical speculations on the recondite meaning of ancient fables, the doctrine of ideas, &c., which are as much out of place as if they had been appended to Paterson's Book of Roads. His greatest works, complete translations of Plato and Aristotle, are copiously illustrated from the ancient commentators, and will be found a rich storehouse of information for those who desire to study the beautiful philosophy of ancient Greece. The publication of these works was also due to the liberality of the Messrs Meredith.

Through the exertions of his friends, Mr Taylor was appointed assistant secretary to the society of arts; his salary, and an annuity of £100 per annum, generously settled upon him by his friend Mr W. Meredith, secured him a competence suited to his limited desires. He died at his house, Walworth, on the 1st Nov. 1835. His conversation is said to have abounded in speculation, and to have been earnestly sought by those who love to wander through the magnificent mazes of metaphysics.

TELFORD, Thomas, a highly distinguished civil engineer, was born in the year 1757, in the pastoral valley of Eskdale, a district in the county of Dumfries. His parents occupied a station in the humble walks of life, which, however, they filled with becoming respectability. His education was limited, both in duration and extent. The parochial school of Westerkirk was his only seminary, and here nothing beyond the simple elements of learning was to be acquired. At the age of fourteen, he was bound apprentice to an eminent builder, in the county that gave him birth; and, having obtained a competent knowledge of his business, on the expiration of his term he for some years practised the same profession in his native district. The southern counties of Scotland, however, at that time furnished but little encouragement for talent; and, as a natural consequence, industry found but a scanty reward. Convinced of these facts, he resolved to leave his native abode, and, accordingly, he repaired to Edinburgh, where he continued, with unremitting application, to study the principles of architecture, agreeably to the rule of science. Here he remained until the year 1782, when, having made a considerable proficiency, he left the Scottish for the British metropolis, and came to London under the patronage of the late Sir William Pulteney (originally Johnstone) and the family of Pasley, who were natives of the parish of Westerkirk.

The first public employment in which he was engaged was that of superintending some works belonging to government in Portsmouth dock-yard. The duties of this undertaking were discharged with so much fidelity and care as to give complete satisfaction to the commissioners, and to insure the future exercise of his talents and services. Hence, in 1787, he was appointed surveyor of the public works in the rich and extensive county of Salop; and this situation he retained to his death.

In 1790 he was employed by the British Fishery society to inspect the harbours at their several stations, and to devise a plan for an extensive establishment at Wick in the county of Caithness. This work was satisfactorily accomplished, and it has been the chief centre of the herring fishery on that coast, under the name of Pulteney Town.

During the same year, 1790, an extensive inland navigation, in length about one hundred miles, called the Ellesmere canal, was confided to his general management. This, in its track along the base of the Welsh hills, passes over the aqueducts of Pont y Cysylte and Chirk. The former, one thousand feet long, and one hundred and twenty-eight feet high, and the latter, six hundred feet long, and seventy feet high, were constructed according to his plans, and under his direction.

In the years 1803 and 1804 the parliamentary commissioners for making roads and building bridges in the Highlands of Scotland, and also for making the Caledonian canal, appointed Mr Telford their engineer. Under the former board, eleven hundred bridges, two of one hundred and fifty feet span, were built, and eight hundred and sixty miles of new road were made; and under the latter board the Caledonian canal, of unusually large dimensions, was constructed.

Under the road commissioners, on the Glasgow, Carlisle, and Lanarkshire roads, thirty bridges, one of one hundred and fifty feet span, and another one hundred and twenty-two feet high, were constructed. Under the same commissioners, and local trustees, above thirty harbours were built; some of which, as at Aberdeen and Dundee, are upon an extensive scale. At and adjoining to Edinburgh, two very lofty and expensive bridges were built from his design, and under his direction. He was also occasionally employed by the city of Glasgow.

Nor were his labours and talents exclusively devoted to Scotland and Wales. In England his professional employment became very extensive. Five large bridges over the Severn were executed after his plans. One of these was one hundred and thirty, another one hundred and fifty, and a third one hundred and seventy, feet span. In all the works to which the commissioners for the loan of exchequer bills granted aid, he acted as their engineer, which, in the aggregate, amounted to more than twenty instances. By the general post office he was also employed in making many extensive surveys in sundry districts of England, Scotland, and Wales.

As engineer to the parliamentary commissioners for improving the communication between London and Dublin, all the works on the Holyhead road, including the Menai and Conway bridges, were performed under Mr Telford's direction, with the exception of the landing-piers of Holyhead and Howth, for those he only completed.

While the preceding works were being executed, several other branches of inland navigation were carried on under his direction. Among these may be named the Birmingham and Liverpool, and the Macclesfield canals; the unrivalled improvements upon the old Birmingham, and the extension of the Ellesmere and Chester canals. A new tunnel also, 3000 yards in length, under the Harecastle hill, on the summit of the Trent and Mersey canal, was conducted under his superintendence, as was likewise the improvement of the river Weaver navigation, which is the outlet of the Cheshire salt works.

In the metropolis, the St Catherine's docks, at Tower hill, were constructed under Mr Telford's direction; and in the Fens, the new outfall of the river Nene, and the drainage of the North Level, stand as memorials of his scientific skill, industry, and perseverance.

In the year 1808 he was employed by the Swedish government to survey the ground, and lay out an inland navigation, through the central parts of that kingdom. The design of this undertaking was to connect the great fresh water lakes, and to form a direct communication by water between the North Sea and the Baltic.

In 1813 he again visited Sweden, taking with him some experienced British workmen, with such suitable materials as were wanted. Here he inspected the work in its progressive state, and superintended such branches as required practical observation. This gigantic undertaking has been fully accomplished, notwithstanding the numerous obstacles it became necessary to surmount. The communication between the lakes has been in active operation for several years; and the whole works being completed, the entire intercourse between the Baltic and the North Sea was to be opened in October, 1834.

The honorary distinction of fellow was awarded to Mr Telford by the royal societies of London and Edinburgh. In 1818 an institution of civil engineers was established, which, being found of practical utility, was incorporated by royal charter in 1828. This institution consists of above two hundred members, resident not only in the British isles, but in Russia, Germany, France, [illegible], and India. Of this institution, from its commencement, Mr Telford was annually elected president, a tribute of respect to his transcendent talents cheerfully paid by its numerous members.

We have already adverted to some of Mr Telford's undertakings. The following is a more detailed list of the principal works executed by him, and under his direction:—

1786. Shrewsbury Castle converted into a dwelling house.

New gaol built for the county of Salop.

Twenty-six bridges in the same county, from [illegible] to [illegible] span; two of these over the river Severn.

1798. A bridge over the river Severn, at the town of Bewdley, consisting of three arches.

A bridge, 112 feet span, over the river Dee, at Kirkcudbright, in Scotland.

Bridgenorth Church.

The Ellesmere Canal, commenced in [illegible]. Length [illegible] miles.

Highland roads and bridges commenced in [illegible]. Under the commission were built 1117 bridges in the Highlands. Of the roads, that from Inverness to the county of Sutherland, [illegible] through Caithness, is superior in point of line and [illegible] to any part of the road of equal continuous length between London and Inverness. This is a remarkable fact, and, from the great difficulties Mr Telford had to encounter in passing through a rugged, hilly, and mountainous district, incontrovertibly establishes his extraordinary skill in the engineering department, as well as in the construction of good public communications.

The Caledonian Canal, begun in 1804. Locks each [illegible] long, 40 wide, depth of water, 20 feet. One of Mr Telford's most splendid works; in constructing every part of which he surmounted prodigious difficulties.

Dunkeld Bridge, finished in [illegible]. Five arches, [illegible] 90 feet span.

The Glasgow, Paisley, and Ardrossan Canal.

Aberdeen Harbour. Extension and improvements commenced in 1810.

Dundee Harbour. Extension and improvements, commenced in 1815.

Dundee Ferry Piers on both sides of the river [illegible].

The Glasgow and Carlisle Road, commenced in [illegible], on which were built 23 bridges of [illegible] feet span and under.

The Lanarkshire Roads, including bridge at Cartland Crags 123 feet high, and four other large bridges.

Increasing the width of the roadway over Glasgow [illegible] bridge with cast-iron.

The Dean Bridge over Leith Water, at Edinburgh, four arches, each 90 feet span. Roadway above the river [illegible].

Pathhead Bridge, 11 miles from Edinburgh, on the [illegible] road, five arches, 70 feet high.

Morpeth Bridge, Northumberland, consisting of three arches.

The Holyhead Road from London to Dublin, including the Menai and Conway Bridges. It has been said, and [illegible] truly, that Mr Telford was inclined to set a higher [illegible] success which attended his exertions for improving the great communication from London to Holyhead, the [illegible] the line of road, its smoothness, and the [illegible] of the bridges, than on that of any other work he executed. The Menai Bridge will unquestionably be the most [illegible] monument of Mr Telford's fame. This bridge over the Bangor Ferry, connecting the counties of Caernarvon and Anglesea, partly of stone and partly of iron, on the suspension principle, consists of seven stone arches, exceeding in [illegible] every work of the kind in the world. These [illegible] land with the two main piers, which rise [illegible] feet above the level of the road, over the top of which the chains are suspended, each chain being 1714 feet from the [illegible] rock. The first three-masted vessel passed under the bridge in 1826. Her topmasts were nearly as high as a [illegible], but they cleared 12 feet and a half below the centre of the roadway. The suspending power of the chains was [illegible] 2016 tons; the total weight of each chain, [illegible] tons. This stupendous undertaking occasioned Mr Telford more [illegible] thought than any other of his works. He told a friend [illegible] James Cleland,) that his state of anxiety for a [illegible] previous to the opening of the bridge was so [illegible] he had but little sound sleep; and that a much [illegible] ance of that condition of mind must have [illegible] health. Not that he had any reason to doubt [illegible] stability of every part of the structure, for he had [illegible] all the precautions that he could imagine useful, [illegible] by his own experience and consideration, or by the [illegible] talents of his very able and faithful assistants, [illegible] possibility that some weak point might have [illegible] and their vigilance in a work so new, kept the whole structure constantly passing in review before his mind's eye, to examine if he could discover a point that did not [illegible] its share to the perfection of the whole. In this, as in all his great works, he employed, as sub-engineers, men capable of appreciating and acting on his ideas; but he was no rigid stickler for his own plans, for he most readily acquiesced in the suggestions of his assistants when reasonable, and thus identified them with the success of the work. In ascertaining the strength of the materials for the Menai bridge, he employed men of the highest rank for scientific character and attainments.

Improving the river Weever navigation, between the Cheshire salt works and sea entrance.

Constructing a tunnel 3000 yards in length, through Harecastle hill, upon the Trent and Mersey navigation, near the great Staffordshire potteries.

Making a canal from ditto, 29 miles in length, by Macclesfield, to the Peak forest and Huddersfield canals.

Improving the Birmingham old canal, formerly laid out by Mr Brindley.

Making a canal 39 miles in length, with a branch 11 miles, to connect the Birmingham canal with the Shropshire and Cheshire canals, and open a new communication with Liverpool and Manchester, and thence to London.

Improving the outfalls of the river Ouse, in Norfolk, and the Nene in Lincolnshire, including the drainage of the North Bedford Level, between the Nene and the Welland.

Constructing the St Katherine docks, adjoining Tower hill, London.

Constructing a cast-iron bridge, 170 feet span, over the river Severn, at Tewksbury, in Gloucestershire.

Building a stone bridge, 150 feet, over the Severn, near the city of Gloucester.

Designing a stone bridge of seven arches 50 feet wide within the parapets, and 500 feet long, built over the Clyde, at Glasgow, on the site of Jamaica street bridge, and called Glasgow bridge.

Opening a navigable communication across Sweden, from Gothenburg, on the North sea, to Soderking, on the Baltic.

In the year 1817, parliamentary-loan commissioners were appointed to apply £1,750,000 towards carrying on public works. Mr Telford was employed as their engineer; and from that time he examined and reported on the following works, for which aid was requested :—

1. The Regent's canal, from Paddington, by Islington, to Limehouse.
2. A cast-iron bridge across the Thames from Queen Street.
3. A short canal between the Thames and Isis, and the Wilts and Berks canal.
4. For an extension of Folkstone harbour, on the coast of Kent.
5. For completing the Thames and Medway canal from Gravesend to Rochester.
6. For completing the Gloucester and Berkley canal, which was done under his direction.
7. For completing the Portsmouth and Arundel canal.
8. For the Tay Ferry piers, which were constructed under his direction.
9. For rebuilding Folly bridge, at Oxford, on the site of Friar Bacon's Study.
10. For making a short canal between the river Lea and the Regent's canal.
11. For rebuilding Windsor and Kingston bridges upon the river Thames.
12. For making a canal from the city of Exeter to the sea.
13. For constructing a harbour at Shoreham, on the coast of Sussex.
14. For building a timber bridge at Teignmouth, in the county of Devon.
15. For completing the Bridgewater and Taunton canal.
16. For constructing locks and wears upon the river Thames.
17. For completing the Liverpool and Manchester Railway.
18. For completing Courton harbour in Ireland.
19. On the proposed Railway between Waterford and Limerick.
20. On the Ulster canal, as proposed, in the north of Ireland.
21. On the Norwich and Lowestoft navigation previous to the commencement, and while in progress.

Mr Telford also made the following extensive surveys, by direction of the post office:—

1. From London, by Ware and Royston, and also by Barnet and Hatfield, to Newark on the Trent.
2. From thence, by York and Newcastle, to Morpeth, also by Doncaster, Boroughbridge, and Durham, to the same place.
3. From Morpeth by Alnwick, Berwick, and Haddington to Edinburgh; also by Wooller, Coldstream, and Dalkeith, to Edinburgh.
4. From Boroughbridge, by Hexham, to Caterfell, on the Teviot Ridge; also, from the same place, by Aldstone Moor down the South Tyne, and across the Irthing river, to Castleton in Liddesdale.
5. From Carlisle, by Langholm, top of Ettrick and Farquhair, to Edinburgh.
6. From Glasgow, across Ayrshire, and along the coast to Stranraer and Portpatrick.
7. From the Holyhead road, at Dunchurch, by Tamworth and Lichfield, to Newcastle, Staffordshire, and thence in three several directions to Liverpool.
8. From Northleach, in Gloucestershire, by Monmouth, Brecon, Carmarthen, and Haverfordwest, to Milford Haven; also from Bristol, by Newport and Cardiff, along the shore to Pembroke.

Many details of Mr Telford's works are contained in Sir Henry Parnell's "Treatise on Roads."

The genius of this distinguished engineer was not confined to his profession. At an early period of his life he gave indications of considerable poetical talent. He was the "Eskdale Tam" of the poetical corner of "The Scot's Magazine," and addressed a poetical epistle to Robert Burns, a portion of which is given in Dr Currie's Life. But, as has been justly and finely observed, "Mr Telford was a poet of the highest order all his lifetime: not a mere rhyme-stringer, into which almost any dunce might be drilled: the poetry of his mind was too mighty and lofty to dwell in words and metaphors; it displayed itself by laying the sublime and the beautiful under contribution to the useful, for the service of man. His Caledonial canal, his Highland roads, his London and Holyhead road, are poems of the most exalted character, divided into numerous cantos, of which the Menai bridge is a most magnificent one. What grand ideas can words raise in the mind to compare with a glance at that stupendous production of human imagination?"

Mr Telford had taught himself Latin, French, and German; and could read those languages with facility, and converse freely in French. He understood algebra well, but thought that it led too much to abstraction, and too little to practice. Mathematical investigation he also held rather cheaply; and always, when practicable, resorted to experiment to determine the relative value of any plans on which it was his business to decide. He delighted in employing the vast in nature to contribute to the accommodation of man. When the project of Denocrates, to hew Mount Athos into a statue of Alexander, bearing a city in the one hand and an aqueduct in the other, was one day mentioned in his presence, his eyes glistened with pleasure, and he exclaimed that Denocrates "was a magnificent fellow!" Nature and practice had so formed his eye for judging of levels, that he has been often known to ride through a country and point out the line which a canal must take, and subsequent surveys have confirmed his views. He was the patron of merit in others, wherever it was to be found: his kind disposition, unaffected manners, and easiness of access, were the means of raising many deserving individuals from obscurity to situations where their talents were seen and appreciated. He was a man of sound principle; and his gradual rise from the stone-masons' and builders' yards to the top of his profession, in his own country, or, we believe we may say, in the world, is to be ascribed not more to his genius, his consummate ability, and his persevering industry, than to his plain, honest, straightforward dealing, and the integrity and candour which marked his character throughout life. He was never married. His servants always spoke of him as the kindest of masters. He died at his house in Abingdon street, Westminster, on the 2d of September, 1834. His remains were deposited in Westminster abbey on the 10th of the same month.

TENTERDEN, LORD. See *Abbot, Charles*, in Supplement.

TERTIARY FORMATIONS. In geology

all the deposits above the chalk have obtained this name, as being of subsequent and distinct formation. Along with the remains of extinct animals, they also contain those of existing species, and are supposed to be of various ages, and consequently of various periods of deposition. The London clay, and Paris basin are ranked as the oldest, and here the remains of mammalia are abundant. Besides being found in various parts of Europe, tertiary deposits have also been discovered in Asia and America. See *Paris Basin.*

THETFORD; an ancient borough of England, situated partly in Norfolk and partly in Suffolk, eighty miles N.N.E. from London. It takes its name from the river Thet, which here joins the Lesser Ouse; the latter passing through the town separates the two counties, and is navigable to Lynn. The town is connected with the houses on the Suffolk side of the river by a handsome iron bridge, erected in 1829. The inhabitants derive their chief employment from an extensive paper-mill, a large iron-foundry, an agricultural machine manufactory, several breweries, and malting establishments; a good trade is also carried on in corn, wool, and other articles.

In the reign of Edward III. Thetford contained twenty-four principal streets, five market-places, twenty churches, eight monasteries, and six hospitals, besides other religious and charitable foundations; but of these, only the names of some remain, and of others a few dilapidated walls serve to mark the sites. Thomas Martin, F.A.S. author of a history of Thetford, was born here in 1696; and Thomas Paine, author of the Rights of Man, was also a native of this town, and educated at the free-school. Population in 1831, 3462.

THIRSK; a town in the north riding of Yorkshire, 217 miles N.N.W. from London. It is divided into two parts, called Old and New Thirsk, by the small river Codbeck, which is crossed by two substantial stone bridges. New Thirsk, with a commodious market-place in the centre, occupies the site of a strong and extensive castle, erected about 979, by the ancient family of Mowbray; in the reign of Henry II., Roger de Mowbray, having become a confederate of the king of Scotland, here erected his standard against his lawful sovereign. On the suppression of that revolt, this fortress, with many others, was entirely demolished by order of the king; the moat and ramparts are still visible, but no vestige of the building remains. Old Thirsk stands on the north-east side of the river, and consists of a long range of cottages on each side of the road. The inhabitants are chiefly employed in the manufacture of coarse linens and sacking. Population in 1831; of borough and town, 2835; of parish, 3829.

THUGS, (*a.*) In the body of the work, we adverted to a fraternity in India, called Thugs or Phansigars, who are united by religious or superstitious rites, and who mainly subsist by strangling and plundering travellers. Although this extraordinary sect of miscreants has long existed, it is only within these few years that any satisfactory knowledge regarding them has been obtained. An article in the Edinburgh Review for Jan. 1837, was the first to draw public attention towards them in this country, and from that article we shall take the liberty of extracting a summary of their history.

The Thugs travel along the roads under various assumed characters, in parties varying from ten or twelve to several hundreds. They appear as traders, as pilgrims, as sepoys seeking or returning from service; and sometimes one of their number figures as a Raja, with all the necessary equipments of tents, carriage, &c., and the rest act the part of his obsequious followers. If the gang is numerous, they are divided into separate parties, who follow each other at some distance, or, taking different routes, rendezvous at an appointed place in advance. Their victims are almost always travellers. The most expert members of the gang are employed to collect information, and insinuate themselves into the confidence of the travellers whom they find at the resting places, or overtake on the road. They usually propose to them to join company for mutual safety; and if the traveller suspects one party, he soon falls in with another, who pretend to enter into his feelings of distrust. A person is sent before to select a proper place for the murder, and scouts are employed to prevent intrusion. The travellers are generally induced to sit down under pretence of resting themselves, and they are strangled at once on a given signal. The bodies are then buried, after having been mangled to expedite dissolution, and to prevent their swelling and causing cracks in the ground. Two Thugs are employed in the murder of each individual, one of whom holds his legs or hands, while the other applies the noose. If a traveller have a dog, it is also killed, lest the faithful animal should cause the discovery of the body of its murdered master.

In Bengal, which is much intersected by rivers, the plan is modified to suit the circumstances of the country. The practice there is to inveigle travellers on board pretended passage-boats, which are manned entirely by Thugs, and then to strangle them and throw the bodies into the river. Several of these boats follow each other at short intervals, so that if the traveller escapes one snare, he may fall into another.

The Thugs are forbidden by their rules to kill women of any description, and either men or women of the following classes—fakeers, bards, musicians by profession, dancing men or women, washerwomen, sweepers, oil-venders, blacksmiths and carpenters, when found together, maimed or leprous persons, men with cows, and Ganges water carriers, while they have the Ganges water actually with them; but if their pots are empty they are not exempted. These exceptions, however, are not made, as has been supposed, out of compassion, but from a feeling which we shall explain hereafter, and which is the strangest part of this strange system. The Thugs date all their misfortunes from their murder of a native lady, whom they call the Kalee Beebee, or black lady, who was proceeding to Hyderabad with a sheet of cloth of gold, for the tomb of a brother of [illegible]. Since that, the northern Thugs have murdered women as well as men; but those south of the Nerbudda adhere to their primitive usage in this respect.

The extent to which the natural feelings of humanity have been extinguished in these miscreants, is perfectly astonishing. A party of them accompanied Newal Singh, a Jemadar in the Nizam's service, and his family, more than two hundred miles,—were on the most intimate terms with them for about twenty days,—and received essential favours from them. Once Newal Singh, not knowing them to be Thugs, pursued their release, when they were imprisoned on a charge of setting a house on fire, in which they had lodged; and on another occasion his two daughters, of eleven and thirteen years of age, saved them from detection by sitting upon some plundered silk, whilst they were searched by the police. The whole gang hesitated; and one party separated from the main body rather than be present at the murder. But will it be believed what was the cause of their demur? Not any dislike to sacrifice people to whom they owed so much, and with whom they had consorted on such friendly terms – that never entered into their minds—but the circumstance of Newal Singh having but one arm. He and all his family were put to death.

The Thugs also occasionally preserve young children of both sexes, and adopt them as their own; and sometimes young women of a riper age are saved, to become the wives of the murderers of their parents.

As the existence of Thuggee has been discovered at different times and in different parts of India, efforts have been made for its suppression. Mr Wright, magistrate of Chittoor, formerly made great exertions for this purpose in the south, and Messrs Halhed and Stockwell in the north of India. A very interesting paper was even published by Dr Sherwood of the Madras establishment, in the thirteenth volume of the *Asiatic Researches* on the subject, of which we have made occasional use. The full extent of the evil, however, was not then known; and whilst our active magistrates flattered themselves that they had put a stop to the practice, it was really only temporarily suspended in their own neighbourhood. A system which embraced the whole of India could not be suppressed by a few partial inroads upon it. The dispersion of the gangs had the usual effect of a persecution which does not go the length of entire eradication. The scattered Thugs formed numerous separate gangs; and, although the number of raw recruits whom they enlisted contributed in the end to their downfal, yet its immediate effect was greatly to increase the number of victims.

At last, the disclosures which were made on the occasion of the apprehension of a large gang of Thugs by Major Borthwick, in Malwa, in 1831, attracted lord William Bentinck's attention; and a system was organised by him for the general suppression of this monstrous evil. Jubbulpoor was fixed as the centre of operations. Captain Sleeman was appointed superintendent, with a number of European assistants, and the co-operation of the native states was engaged. The plan of proceeding is founded on an accumulation of evidence given by Thug approvers. Two or three of the members of every gang which is seized, are admitted as king's evidence, and they are immediately called on to dictate a narrative of all the expeditions in which they have ever served,—mentioning the individuals with whom they were associated; and their authentic testimony is then considered as closed. The trials depend upon the concurrence of a number of depositions, the originals of which were taken in different parts of India, from different persons, without a possibility of previous intercommunication;—upon the recognition of the prisoner by the witnesses, to each of whom he is shown in a crowd of other people;—and upon the confirmation of the evidence by the discovery of the bodies in the places indicated. Each of the assistants has a section of India allotted to him, within which he is responsible for the apprehension of these miscreants, with the help of the approvers and of the accumulated evidence; and as the mass of information is rapidly becoming more and more complete, we may hope that every professional Thug in India will soon be known and secured. Up to October 1835, 1562 persons had been committed on the charge of Thuggee; of whom 382 had been hanged, and 986 transported or imprisoned for life. In the sessions of 1836 held at Jubulpoor, 241 prisoners were convicted of the murder of 474 individuals, of whose corpses 314 were disinterred, and inquests held upon them.

In 1834 these operations were threatened with a severe check, which was happily averted by lord William Bentinck's firmness. Maun Singh, the Rajah of Joudpoor, pleaded the right of granting asylum, and refused to give up the Thugs who had taken refuge in his territory; but he was informed that he could not be permitted to make his country the headquarters, whence these bands of assassins might carry on their attacks against all the neighbouring states. On his persisting, an army was assembled against him, and he quietly submitted. The power which put down the Pindaree system was alone equal to the suppression of Thuggee. Occasions like these afford the best illustrations of the advantages of our supremacy in India. Even if the requisite public spirit and intelligence were not wanting, the native states are incapable, from mutual jealousy and distrust, of combining together for the accomplishment of any object of general interest. At this point, the supreme power steps in;—explains to subordinate allies the extent of the evil, and the nature of the remedies which ought to be applied;—collects for one common effort the resources of the whole of India, and directs that effort by European intelligence, energy, and perseverance.

Notwithstanding the alleged antiquity of the profession, the Thugs to the north of the Nerbudda cannot trace their own pedigree higher than the era of the first race of Mahommedan kings of Dehli. Their tradition is, that their ancestors, who were then divided into seven clans, as their descendants still are, used to infest the roads in the neighbourhood of the capital, until they drew upon themselves the anger of an emperor of the house of Ghoree, by murdering one of his domestics, who was in league with them, and who threatened to betray them with a view to extort more money than they thought reasonable. On this, they were expelled from Dehli. The majority of them retired to Agra; and ultimately to the strong country at the junction of the Jumna, the Chumbul and the Kalee Sindee, which continued to be their headquarters until they were driven away by Mr Halhed in the year 1812. These seven clans are the original trunk upon which all the Thug associations to the north of the Nerbudda have been grafted. They were originally all Mahomedans; but for a long time past Mahomedans and Hindus have been indiscriminately associated in the gangs; the former class, however, still predominating. Their numbers are kept up by descent (the profession being, as is usual in India, hereditary), by adoption, and occasionally, but not often, by the admission of qualified adults.

The Thugs to the south of the Nerbudda boast a purer descent. They can trace back the trade of Thuggee in their families for more generations, and have adhered with greater strictness to the rules of their profession than those who are of Dehli origin. They also refuse to intermarry with the families of the latter,—saying, they are of lower caste, and formerly 'drove bullocks and were itinerant tradesmen.' This point was warmly disputed by the northern and southern Thugs before Captain Sleeman. It was admitted by some of the northern men that, at their funerals, the women who bring the water, chant the occupations of the ancestors of the deceased, in a manner which shows that they were originally descended from gangs of wandering Mussulmans, who followed armies, and lived in the suburbs of cities and in the wild wastes, and that their pretensions to higher descent were unfounded. Others acknowledged, that at marriages an old matron will sometimes repeat as she throws down the toolsee—* 'Here's to the spirits of those who once led bears and monkeys; to those who drove bullocks, and marked with the godnee;† and those who made baskets for the head;' but others, who were more zealous for the honour of their tribe, insisted that these were only disguises assumed by their ancestors to enable them to practise their trade in greater safety.

It is admitted on all hands, that two of the original seven clans of northern Thugs, which did not, like the others, settle at Agra after their expulsion from Dehli, retain their wandering habits to this day; and there seems reason to suspect, that most of the gipsy tribes who are to be found in all parts of India, but are most numerous to the north and west, practise Thuggee as occasion offers.

The account which the Thugs give of the first establishment of their profession will explain the nature of its pretensions to a divine origin.

'The Thugs have a tradition that a demon, by name Rukut Beej Dana, infested the world, and devoured mankind as often as they were born or created; and to enable the world to be peopled, Kalee Davey determined to put him to death. This demon, they say, was so tall that the deepest ocean never reached above his waist; and he could, consequently, walk over the world at his ease. Kalee Davey attacked him, and cut him down; but from every drop of his blood another demon arose, and as she cut them down, from every drop of their blood another demon sprung up, and the numbers increased at this geometrical rate, until she became fatigued with the labour. On this she formed two men from the sweat brushed off from one of her arms; and giving them each a handkerchief, told them to put all these demons to death, without allowing one drop of their blood to fall on the ground. After their labour was over, they offered to return to the goddess the handkerchiefs with which they had done their work; but she desired them to keep them as the instruments of a trade by which their posterity were to earn their subsistence, and to strangle men with these handkerchiefs, as they had strangled the demons, and live by the plunder they acquired; and having been the means of enabling the world to get provided with men by the destruction of the demons, their posterity would be entitled to take a few for their own use.'

The goddess also told them that they might leave the bodies of their victims on the ground, and she would take care that they should be removed, provided they never looked back to see how she disposed of them. On one occasion, however, a slave had the audacity to look back, and saw the goddess without any clothes on, devouring the bodies and throwing them about in the air. Her modesty and dignity were extremely offended, and she told them, that in future they must bury the bodies themselves; but from some remains of compassion for her ancient followers, she bestowed on them a pick-axe endued with various supernatural qualities.

A pick-axe is consecrated by each gang before setting out on an expedition, and is regarded by a Thug much in the same light as his sword is by a soldier. It is the mark of his profession,—he swears by it, and under such an awful sanction, that the person who forswears himself will, within two or three days, 'die a horrid death; his head will turn round, his face towards his back, and he will writhe in tortures till he dies.' The sound of the consecrated pick-axe is never heard in digging a grave by any except a Thug. It is carried by the shrewedest, cleanest, and most sober and careful man of the party in his waist-belt. When in camp, he buries it in a secure place with its point in the direction they intend to go; and if another direction is better, its point will be found changed. Formerly it used to be thrown into a well, whence it would come up of itself, when summoned with the appropriate ceremonies; but since the northern Thugs have begun to do what is forbidden, and neglected what is enjoined, it has lost that virtue, as far as they are concerned. In the Deccan, where the primitive spirit of Thuggee has not been departed from, this is still the case. 'During a whole expedition that I made with them,' says a northern Thug, who served a campaign with the people of his own profession, in the south, '[illegible] Khan and his brother carried the pick-axe, and I heard them repeatedly in the morning call them from the well into which they had thrown them overnight, and saw the pick-axes come of themselves from the well, and fall into their [illegible] which they held open *thus*—Here he described the mode.'

The most ordinary and effectual mode, however, in which the goddess interferes in behalf of her votaries, is by means of omens. These are considered by the Thugs as signs expressly appointed to guide them to their prey, or to warn them of approaching danger; and no member of the fraternity doubts, that if these omens had been attended to and the other prescribed rules observed, the system of Thuggee must have flourished under the auspices of its divine patroness, in spite of all our efforts for its suppression.

TIN, (*a.*) The principal tin-mines of Cornwall are in the south-west part of the county, in the parish of St Just, where the country consists principally of granite; but there are several productive mines in the slate in other places. Some of the mines are worked under the bed of the sea. One was opened actually in the sea some years ago. It was called Wherry Mine, and was situated near the shore, a little to the west of Penzance, where a rock of elvan, which had been found to contain slender veins of ore, was uncovered at low water. An adventurous miner set to work, although the rock was covered several feet deep at every tide, so that he could only proceed during a part of the day. Every time the men returned to their work they had to empty out the water in the excavation they had formed; but after they had advanced some way an inclosure, or kind of coffer-dam, like what is used in building the piers of bridges, was constructed, which rose above the high-water level, and, by machinery connected with a steam-engine at 200 yards distance on the shore, the work was proceeded with. The mine produced a considerable quantity of ore for several years, when unfortunately a large vessel, which had drifted from her moorings, struck against the coffer-dam, overturned it, and the whole works were in an instant filled with water.

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* Ocymum sanctum. Tulsee was a nymph beloved by Krishna, and by him turned into this plant.

† Needle used in tattooing.

There are two systems of tin-veins in Cornwall, both running nearly east and west; but the oldest dip to the north, while the newer, which traverse the former, dip to the south. Their width is various, from a few lines to several feet, and in their length there is the same diversity: some have been traced as much as two miles. The same vein is continually changing its dimensions in point of width. Those which are found in the slate are usually much more productive of metal than those which traverse the granite; and they very commonly are met with at the junction of these two descriptions of rocks, and usually pass from the one into the other without any change taking place in the nature and contents of the vein, although there are not unfrequent exceptions to this. Quartz is the most common substance of the vein, and the ore is disseminated through it; but the vein-stone often consists of other minerals. In most of the veins of Cornwall, tin is found nearer the surface than copper. Besides the veins now found traversing the rocks, another abundant supply of tin in Cornwall is from what are called the "*stream works.*" In the lower parts of many valleys there are accumulations of gravel, sand, and other alluvium, and in these vast quantities of rolled pebbles and sand, composed of a very pure tin-ore, are met with. That ore is dug up and such mines are called "stream-works," because streams of water are employed to wash the gravel and sand, and so separate the ore from the other substances with which it is mixed. One of the most extensive of these is that called "Happy Union," in the valley of Pentuan and parish of St Austell, where, for many ages, a vast quantity of tin has been obtained. The valley is from 300 to 600 feet wide, and contains an accumulation of gravel, sand, and clay, to the depth of 60 feet, in many places. The gravel consists of fragments of granite, similar to that of the adjoining hills, all considerably rounded by attrition, together with fragments of slate, which have not been much water-worn. The tin-ore lies, for the most part, in the lowest bed of this alluvial deposit, and in the form of coarse sand, and of pebbles of all sizes, up to ten lbs. weight.

Until the latter part of the seventeenth century, all the tin produced in Cornwall, whether from streams or mines, was smelted in blast furnaces with charcoal. It was not until the former part of that century that pit-coal had been successfully applied to the smelting of any of the metals. The decrease of wood in Cornwall, and the consequent increasing expense of smelting tin with charcoal, naturally induced the tinners to turn to any substitute, and to try the use of pit coal. This was probably the immediate cause of the erection of air (reverberatory) furnaces, in which the fuel and the ore were separated, and culm-coal (possessing much of the properties of charcoal) mixed as a flux with the ore.

There are now three kinds of tin made in Cornwall, viz., grain-tin, refined tin, and common tin.

Grain-tin was formerly made solely in blast-furnaces, only from the diluvial tin-ores, or what is generally called stream-tin, remarkable for its superior purity. It was the only kind of tin used for making tin plates (or rather for tinning the plates of iron), on account partly of its fluidity, and partly of its superior colour and lustre. It was also used, in small quantities, in dyeing scarlet and in making tinfoil. The price was much higher than that of common tin, sometimes 20s. to 30s. per cwt. higher. Grain-tin has lately been almost wholly made in reverberatory furnaces, like other tin, but still generally from diluvial ores, although mixed, in a small degree, with the very purest mine ores. This cheaper mode of manufacture has greatly reduced the price.

About the beginning of the present century when scarcely enough grain-tin could be procured for the use of the tin-plate manufacturers, the tin-smelters, by selecting particular ores, commenced making tin of such a quality as was quite fluid enough for tin plates, although not of so fine a colour; which was used for the first coat on the iron plate, and grain-tin for the second (for all the plates are dipped twice in the tin). This is called refined tin, and its quality has been so much improved, (although still it is not equal to grain-tin,) that by most of the tin-plate manufacturers no other tin is now used. There are a few, however, who still use grain-tin for the outer coat of the plate.

Common tin is made from the mass of the tin-ores of Cornwall.

Statement of the quantities of grain-tin and other tin made in the twenty years ending with 1837.

	Grain tin.	Refined and Common tin.		Grain tin.	Refined and Common tin.
Years.	Tons.	Tons.	Years.	Tons.	Tons.
1818	660	3,406	1831	246	4,060
1819	325	2,990	1832	236	4,067
1820	306	2,684	1833	216	3,849
1821	394	2,979	1834	244	3,748
1822	377	2,901	1835	267	3,961
1823	488	3,790	1836	296	3,758
1824	494	4,511	1837	299	4,531
1825	221	4,037			
1826	265	4,338		6,509	77,805
1827	311	5,244			
1828	314	4,617	Average about 1-13th part	325	3,890
1829	246	4,188			
1830	315	4,129			

The relative prices of the different kinds of tin are now:—

	s.	
Superior grain for dyeing, &c.	99	per cwt.
Tin-plate grain	94	
Refined ditto	89	
Common ditto	82	

The name grain-tin appears to have been given to it from its quality of granulating. This is done by placing a block of it in a furnace-kettle, and heating it as high as it will bear without melting; it is then raised by a pulley to a considerable height, and suddenly dropped on a hard surface, by which it becomes instantly divided into small straited masses, to which the name *grains* has been given.

As contradistinguished from this, the other tin was formerly called *block-tin*, but this distinction has long been disused.

The quantity of grain-tin now consumed in dyeing, and in making tinfoil, is nearly if not quite, 200 tons per annum.

The prices of tin in the home market, for the twenty years ending with 1837, were as follows:—

Price of Tin in the Home Market in each Year from 1818 to 1837.

Years.	Common tin in London. s.	d.	Refined tin in Wales. s.	d.	Years.	Common tin in London. s.	d.	Refined tin in Wales. s.	d.
1818	84	9	88	6	1828	73	3	81	9
1819	73	3	78	6	1829	74	0	80	3
1820	73	3	76	9	1830	72	9	78	0
1821	75	8	81	6	1831	73	6	83	0
1822	79	6	100	9	1832	72	9	78	0
1823	94	9	105	3	1833	72	9	76	9
1824	88	0	98	3	1834	78	0	86	6
1825	91	4	94	8	1835	91	6	90	0
1826	77	6	88	3	1836	108	6	114	3
1827	76	0	83	3	1837	88	0	93	3

The price of tin-plate grain-tin is usually about 5s. per cwt. above the price of refined tin.

Until 1838 all the tin of Cornwall paid a duty of 4s. per 120 lbs. to the duke of Cornwall, or to the sovereign when there was no duke: the fees to the officers, and the loss of time, were equal to 1s. more. This duty is now however abolished, and the miners reap the benefit.

The only part of Europe besides Great Britain in which tin is now obtained in any quantity is Germany. There are mines in Bohemia, Saxony, and Silesia, and the produce is sufficient to supply a large proportion of the demand for this metal in that part of Europe. There are some mines of high antiquity in Spain, in Gallicia, but we have no information respecting their present state. It was not known to exist in any part of France till the year 1809, when it was discovered not far from Limoges, in the department of Haute Vienne; and, in the year 1817, it was accidentally found in the south of Brittany, not far from the mouth of the river Loire. A marine officer, who had long been detained as a prisoner of war in England, and had been quartered in Cornwall in the neighbourhood of the tin-mines, returned to his native town of Piriac, a small sea-port of the department of the Lower Loire. Going out sea-fishing one day, and wanting some weights for his lines, he picked up a pebble on the shore, which appearing to him unusually heavy, he took it home to compare with a piece of Cornish stream tin which he had brought from the place of his captivity, and found it to be the same substance. He gave notice of his discovery in the proper quarter, and M. Dufrenoy, now a distinguished French geologist, then a young *aspirant* of the school of mines, was sent with another to investigate the matter, and the report they made shows a remarkable uniformity of structure between that part of Brittany and the tin district of Cornwall on the opposite side of the channel. The country between the mouth of the Loire and Piriac is composed of granite and slate, and it is at the junction of these rocks that the tin ore is chiefly found. They met with veins traversing the rocks, and a considerable quantity of stream tin both in the form of pebbles and of sand; and their impression was, that this stream tin was produced by the wearing of the rocks containing the veins by the action of the waves; the same action going on now, as in Cornwall in remote ages. The continued large importations of tin from England into France shows that this discovery has not as yet been attended with any great results.

By far the largest quantity of tin that has yet been found in any part of the world is, after Cornwall, in the Indian Archipelago. It has been met with as well on the continent as in the islands, from about 8° north to 5° south latitude, and from 98° to 107° of east longitude. It is found in Siam, and in numerous parts of the Malayan peninsula, and in the islets on its coast, and in the island of Borneo; but the richest mines are in the island of Banca, which lies off the south-eastern part of Sumatra. The discovery was accidental, in the year 1710, when some stream tin was smelted in a fire that had been made on the ground. The ore is wholly of this description, and occurs as in Cornwall, in alluvial deposits; it is seldom followed below thirty or forty feet deep, and the beds of ore frequently lie within three or four feet of the surface. The mines are exclusively worked by Chinese under the authority of the government, and they deliver the metal at a fixed rate. The smelting is conducted by a very simple and rude process, and yields from 50 to 70 per cent. of pure metal; where it yields less than 30 per cent. it is not thought worth working. In thirty years after the discovery the mines yielded no less than [illegible] tons, and in the most prosperous times they are said to have produced about 3500 tons annually, but latterly not more than half that quantity. The mines are in the northern and western parts of the island, but a large portion of it yet remains to be explored, and in the opinion of Sir Stamford Raffles, there seems no reason to apprehend any deficiency in the ore for centuries. Mr Crawfurd thinks that the falling off is more to be ascribed to a want of skill in the art of mining than to any deficiency of the ore. The higher mountains of Banca are of granite, and the stream tin is found in gravel composed of granite and other primary rocks. Sir S. Raffles is of opinion that the tin ore found in the Malayan peninsula and islands, including that of Banca, has been originally washed down from the great central mountains of the continent which terminate the eastern peninsula. The principal demand for Banca and Malay tin is in China, which is probably not less than [illegible] tons a year, and Bengal takes off about half that quantity, the remainder going to America and Europe.

TOD, Lieutenant-colonel JAMES, of the Hon. East India Company's service, was a native of Scotland, and born about the year 1782. In [illegible] 1800, at the age of seventeen or eighteen, he left England for India, and obtained a commission in the second Bengal European regiment. Thence he volunteered for the Molucca isles, was transferred to the marines, served as one on board the Mornington, and afterwards, as he expressed it, "ran the gauntlet from Calcutta to Hurdwar." In December, 1805, when a subaltern in the subsidiary force at Gwalior, he was attached to the embassy of his friend, Mr Graeme Mercer, sent at the close of the Mahratta war to the camp of Sindhia, then seated amongst the ruins of Mewar, which it reached in the spring of 1806. This interesting country (Rajpootana) became the scene of his future official labours; and it has fallen to the lot of very few individuals to perform services so important, considered with reference to the scope of his duties. His disposition was eminently frank and open, warm and sensitive, yet distinguished by all those qualities which make up our idea of amiability. His character was firm, independent, and energetic, bordering on enthusiasm. A strong taste for geographical, historical, and archæological pursuits, was developed by the accident which placed him in a country rich in those objects and recollections which gratify the antiquary.—A [illegible] ry, as he states, at his visit almost a *terra incog-* *ita* to Europeans, and peopled by a race whose udimental qualities, though obscured by the vices ngendered through misgovernment, were in har- iony with those of his own character. Almost mmediately upon his arrival in that country (as he ells us in his Geographical Memoir) he began its urvey, the details of which he has stated in the Memoir, and the result is given in the magnificent map which graces his *annals* of Rajast'han. In he maps prior to this survey, Rajpootana was al- most a total blank; nearly all the western and entral states are wanting; the rivers were sup- osed to have a southerly course into the Nerbudda, nd the position of the two capitals (the ancient nd the modern) of Mewar was precisely reversed; Cheetore being placed in the best maps S. E. of Oodipore, instead of E.N.E. The map of colonel Tod was completed in 1815, and presented to the mar- quis of Hastings: it is worth remarking that the uthor first bestowed the name of Central India upon the country, which it has since retained. The map was of vast utility to the government, being made one of the foundations of lord Hastings' plan of operations in the year 1817. His surveys were continued without interruption, except by his in- defatigable researches into the history and anti- quities of the Rajpoot states, till 1817, when he was appointed political agent of government, hav- ng the sole control over the five principal states of Rajast'han; Mewar, Marwar, Jessulmér, Kotah, and Boondi.

The results of his administration, as restorer of Rajpootana, are exhibited in his great work, and are traced in still more unexceptionable characters, in the gratitude of the people. The extraordinary and enthusiastic attachment of the Mewarees, in particular, to him, are painted in very delightful colours by bishop Heber, who, during his journey through this part of India, heard incessant inquiries respecting "Tod Sahib," and whether it was likely that they should see him again. "His name," the bishop observes, "appears to be held in a degree of affection and respect by all the upper and middling classes of society highly honourable to him." Speaking of Bheelwara, which colonel Tod had almost re-created, he says,—"In short, as one of the merchants who called on me said, 'It ought to be called *Todgunge;* but there is no need, for we shall never forget him.' Such praise as this," he continues, "from people who had no further hopes of seeing or receiving any benefit from him, is indeed of sterling value." The fact is, that the place was called *Todgunge*, but this name was withdrawn at the instance of colonel Tod himself.

In the year 1822, after two-and-twenty years of service, eighteen of them spent amongst the Rajpoots of western India, and five as political agent, colonel Tod's shattered health called upon him imperatively to suspend his toils and quit the climate of India. But the ruling passion forbade him to proceed direct to the port of embarkation. In 1819, he had completed the circuit of Marwar, visiting its capital, Joudpoor *viâ* Komulmér, thence returning by Mairta and Ajmer to Oodipoor. Next year, he visited Kotah and Boondi, the latter of which he revisited in 1821, having received intelligence of the death of his friend, the Rao Raja, Ram Sing, who had left colonel Tod guardian of his infant son, the prince of the Haras. He returned to Oodipoor in March, 1822, and took final leave of the valley in June of that year. He proceeded across the Aravulli to Mount Aboo, and inspected the wonders of that sacred place. He discovered the ruins of an ancient city in the skirts of Marwar; explored the ancient city of Anhulwarra, the capital of the Balhara sovereigns; crossed the peninsula of Saurashtra to its extreme western point, visiting in his way Puttun Somnath and its celebrated temple, and the Jain shrines of Girnar; and embarked for England, at Bombay, in the early part of 1823. From the period of his return, his time, fortune, and health were devoted to literary pursuits. Indeed, to his ardent and unremitting exertions, whenever he was not actually disabled by suffering, must be ascribed the fatal attack which terminated his existence in the vigour of life. He was seized with apoplexy on the morning of Monday, the 16th of November, the anniversary of his marriage, while transacting business at his bankers', and expired in the afternoon of Tuesday, the 17th of November, 1835. He had latterly passed twelve months abroad, in the hope of conquering a complaint in the chest, and returned to England only on the 3d of September. During his last winter, in Rome, he was daily occupied on a work, to be entitled "Travels in Western India," being the result of observations in a journey he made to the peninsula of Guzerat just before he finally quitted the country.

TRIM; an ancient town of Ireland, the capital of the county of East Meath, in the province of Leinster; is situated in the parish of the same name, which is partly in the barony of Lower Moyfenragh, and partly in that of Upper Navan. It lies to the north-west of Dublin, from which it is distant thirty-two miles. It is built upon the banks of the river Boyne, and is surrounded by a productive and populous district. It formerly returned two members to the Irish parliament. The trade carried on here is very trifling; a few persons are employed in the manufacture of ticken and woollen for home consumption. Trim is remarkable for its ancient ruins; among them the castle is the most prominent, both from its dimensions, and its situation on the banks of the Boyne. It is said, indeed, to be the most spacious edifice of the kind, of which there are any remains in Ireland. Besides the castle, there are the ruins of several monastic establishments in the town and neighbourhood. Population of parish of Trim, 5926, of which 3282 are in the town.

TROTTER, Thomas, M.D. formerly physician to the channel fleet; was a native of Roxburghshire, and was educated at the university of Edinburgh with a view to the medical profession. In 1782, when very young, he was appointed surgeon in the royal navy; and in his treatise on the scurvy (first published in 1786) he says that he was the first member of his corps who was obliged to seek employment in the African trade. On his return from Africa in 1785, he settled at a small town in Northumberland; and, during his residence there, he obtained, in 1788, his doctor's degree at Edinburgh, the subject of his thesis being De Ebrietate, which was praised by Dr Cullen. In 1789, by the friendship of admiral Roddam, he was appointed surgeon of his flag ship. In the same year he was examined before a committee of the House of Commons appointed to inquire into the slave-trade. In 1790, he published a "Review of the Medical Department of the British Navy;" in 1793, he was appointed physician to the royal hospital at

Portsmouth, and in the next year physician to the fleet. Before this period, the medical discipline of the navy had been in a miserable state, both as respected the care of the men's health, and the advancement of the medical officers. Dr Trotter, however, presently arranged these matters in a systematic manner; and the many marks of respect which were shown him, both by officers and by seamen, are the best proofs of the advantageous nature of the changes which he effected. On his retirement from the navy, Dr Trotter settled at Newcastle, where he practised for many years with great reputation, occasionally amusing himself with poetry and other elegant literary pursuits. He died on the 5th Sept. 1832. His professional works deservedly rank high, and their authority is frequently quoted by medical professors and teachers. The titles of his publications not already mentioned, are, in chronological order, as follows:—Medical and Chemical Essays, 1796. Medica Nautica, or an Essay on the Diseases of Seamen, 1799, 3 vols. 8vo. Suspiria Oceania, a Monody on the late Earl Howe. An English edition of his Essay on Drunkenness, 1804. 4th edition 1812. An Address to the Proprietors and Managers of Coal Mines, on the Means of destroying Damp, 1806. A View of the Nervous Temperament, being a practical Treatise on Nervous, Bilious, Stomach, and Liver Complaints, 1812, 8vo. The Noble Foundling, a Tragedy, 1813. A volume of Poems; also many communications to the Medical Journal, the European Magazine and other periodical works.

TROUGHTON, Edward, an eminent mathematical and astronomical instrument maker, was a native of Cumberland. At the age of seventeen he came to London, and was instructed by an elder brother in the rudiments of the art in which he afterwards so greatly excelled. About the year 1780, in conjunction with his brother, he settled in Fleet street, and at that early period of his life laid the foundation of his future fame. His invention of a method by which the graduation of instruments of the largest class could be effected with a degree of ease and accuracy unattainable by any former means, and the construction of an engine (still in the establishment of his successor) for the division of those of smaller dimensions, added to the skill and care employed in their arrangement and execution, gave to his works a superiority that was early appreciated by those whose pursuits required such assistance. His method of original graduation was disclosed to the public through the medium of the royal society, in the year 1809; and the Copley medal was awarded to him by that learned body, of which he was shortly afterwards elected a fellow. Of the astronomical society he was an original member, subsequently one of the vice-presidents; and to the close of his life felt a lively interest in its prosperity. His celebrity was not confined to his native country, for about the year 1830 the gold medal of science was presented to him by its illustrious patron the king of Denmark. To what extent the present state of navigation, geography, and astronomy is indebted to his talents, is not easily determined; but there was scarcely any extensive geodætical operation undertaken in which his assistance was not solicited; and there is scarcely an observatory in the world of any notoriety that does not contain some monument of his genius, either executed in the establishment of which he was once the head, or constructed by other artists in imitation of his models. He died on the 12th June, [illegible], aged eighty-one.

TROWBRIDGE; a town of England, in the county of Wilts, situated on an eminence near the river Were, a little above its junction with the Avon, ninety-nine miles W. by S. from London. The inhabitants are employed in the manufacture of woollen cloth, which was introduced here at an early period; the articles made are chiefly kerseymeres, with some superfine broad cloth. A communication is opened with London and Bristol, by means of the Kennet and Avon canal, which passes about a mile north of the town.

The church, which is dedicated to St James, is a spacious structure, consisting of a nave, chancel, two side aisles, with chapels attached, a north and south porch, and a large tower at the west end, surmounted by a lofty spire; the nave and aisles are crowned with battlements and crocheted pinnacles. Here are also places of worship for Baptists, Presbyterians, and Methodists. A free-school, in which fifty boys are instructed, is supported by property left for charitable purposes. The Rev. George Crabbe, the poet, was rector of this parish for eighteen years, and died here Feb. 3, [illegible]. Population of town and parish in [illegible], [illegible].

TYPE-FOUNDING. In the article *Printing*, in the body of the work, an account is given of the invention of movable metal types, and their application to the art of printing. In this place, we have only to describe the manner in which types are made. The metal of which they are formed is an alloy, consisting essentially of [illegible] lead and one fifth regulus of antimony, or [illegible] parts lead to one of antimony. The smallest sized types requiring the hardest metal, the alloy for these is twenty-five parts of the regulus of antimony to seventy-five parts of lead: the proportions are varied for the larger sizes, so that in some cases fifteen parts of antimony are used to eighty-five of lead. The antimony gives the lead a superior hardness when cast; and as this alloy has the property of shrinking less than most other metals as it cools, the type receives all the sharpness and finish, which it can acquire, by filling every part of the mould. In making types, the letter is first cut by an artist upon the end of a steel punch, answering to the shape of the intended type, or the letter may be formed by hammering down the hollows, filing up the edges, and then hardening the soft steel. The punch is then driven into a piece of copper, which forms the matrix, or bottom of the mould intended to produce the letter. As many varieties of punches must be made of [illegible] as there are sizes and species of characters required. In casting, the types are formed with great rapidity, owing to the quickness with which the metal cools. The mould in which the types are cast, is composed of two parts. The outer part is made of wood, the inner of steel. At the top it has a hopper-mouth, into which the fused type-metal is poured. The interior cavity is quite uniform, although the mould consists of two divisions, because each half, which forms two of the four sides of the letter, is exactly fitted to the other. The matrix is placed at the bottom of the mould, directly under the centre of the orifice, and is held in its position by a spring. Every letter that is cast can be loosened from the matrix [illegible] by removing the pressure on the spring.

The furnaces of a type foundry are each surmounted with an iron pot containing the [illegible] alloy. Into this pot the founder dips a very small iron ladle, to lift merely as much metal as will cast a single letter at a time. Having poured in the metal with his right hand, and returned the ladle to the melting pot, the founder throws up his left hand, which holds the mould, above his head, with a sudden jerk, supporting it with his right hand. It is this movement which forces the metal into all the interstices of the matrix; for without it, the metal, especially in the smaller moulds, would not be able to expel the air and reach the bottom. The pouring in the metal, the throwing up the mould, the unclosing it, removing the pressure of the spring, picking out the cast letter, closing the mould again, and re-applying the spring to be ready for a new operation, are all performed with such astonishing rapidity and precision, that a skilful workman will turn out 500 good letters in an hour, being at the rate of one every eighth part of a minute. A considerable piece of metal remains attached to the end of the type as it quits the mould. There are nicks upon the lower edge of the types, to enable the compositor to place them upright, without looking at them.

From the table of the *caster*, the heap of types turned out of its mould, is transferred from time to time to another table, by a boy, whose business it is to break off the superfluous metal, and this he does so rapidly as to clear from 2000 to 5000 types in an hour; a very remarkable dispatch, since he must seize them by their edges, and not by their feeble flat sides. From the breaking off boy, the types are taken to the *rubber*, a man who sits with a grit stone slab on a table before him, and having on the fore and middle finger of his right hand a piece of tarred leather, passes each broad side of the type smartly over the stone, turning it in the movement, and that so dexterously, as to be able to rub 2000 types in an hour.

From the rubber, the types are conveyed to a boy, who, with equal rapidity, sets them up in lines, in a long shallow frame, with their faces uppermost and nicks outwards. This frame, containing a full line, is put into the dresser's hands, who polishes them on each side, and turning them with their faces downwards, cuts a groove or channel in their bottom, to make them stand steadily on end. It is essential that each letter be perfectly symmetrical and square; the least inequality of their length would prevent them from making a fair impression; and were there the least obliquity in their sides, it would be quite impossible, when 200,000 single letters are combined, as in one side of the *Times* newspaper, that they could hold together as they require to do, when wedged up in the chases, as securely as if that side of type form a solid plate of metal. Each letter is finally tied up in lines of convenient length, the proportionate numbers of each variety, small letters, points, large capitals, small capitals, and figures, being selected, when the fount of type is ready for delivery to the printer.

Several mechanical schemes have been proposed for founding types, but as yet none of them can compete in practical utility with the dexterity and precision of handiwork.

An account of the different sizes of types, with specimens, will be found in the article *Printing*.

Schoeffer, the partner of Guttenburg, the reputed inventor of the art of printing with movable types, was the first who invented matrices for *casting* types, each individual type having been before this *cut* in wood or metal. Upon this invention the practical utility of the art of printing mainly rests. In the early history of the art, printers were all their own letter-founders and also their own bookbinders; but as business increased, a division of labour took place, and the trades began to be separated. In England, we find it ordered by a decree of the Star Chamber in 1637, that there shall be four founders of letters for the kingdom, and no more. The provisions of this absurd and oppressive decree were recognized in an act of 14th Charles II., (1674,) which again restrained the number of master-founders to four; and, by the same act, the number of printers was limited to twenty. This, however, was only a provisional act, which appears to have been impossible of execution, like all other enactments which are directly opposed to the spirit of an age. The demand for knowledge had become so general that four founders and twenty printers were quite inadequate to the supply, whatever might be the opinion of Charles II. and his arbitrary court. The supply, therefore, went on. In a very curious book, written by Joseph Moxon, a mathematical-instrument maker, who also applied his mechanical knowledge to the art of letter-cutting, we are informed that, in 1686, "the number of founders and printers were grown very many, insomuch that, for the more easy management of typography, the operators had found it necessary to divide it into the several trades of the master-printer, the letter-cutter, the letter-caster, the letter-dresser, the compositor, the corrector, the pressman, the ink-maker, besides several other trades which they take into their assistance, as the smith, the joiner, &c." Such a division of labour indicates the natural progress of an art towards perfection, and is indeed in itself a cause of that perfection. Moxon says that letter-cutting was a handy-work at that time, kept so concealed among the artificers of it, that he could not learn any one had taught it any other. Moxon himself, however, laid down mathematical rules for the formation of letters, but he does not appear to have attempted any improvement in their shape. In the reign of Anne most of our type was imported from Holland, where the letter-founders had succeeded in producing much more beautiful characters. At length, however, in 1720, William Caslon, an engraver of gun-locks and barrels, having the credit of being a most ingenious artist, was employed by the "Society for Promoting Christian Knowledge" to cut the punches for a fount of Arabic. His success led him to enter into the business of a letter-founder, in which undertaking he was assisted by Bowyer, the celebrated printer. In a very few years Caslon had rendered the English types superior to any in Europe; when the importation of foreign types ceased, and the founts of this ingenious founder became in demand on the continent.

Among the more distinguished type-founding establishments, that of Wilson and Sons, Glasgow, long stood pre-eminent. The types manufactured there were highly esteemed all over Europe for their elegance and durability. Those in the Greek character, especially, were held to be unrivalled. This establishment was begun about the year 1740, by Dr Alexander Wilson, a very ingenious man, who afterwards became professor of practical astronomy in the university of Glasgow. It was continued by his descendants with undiminished credit till the year 1834, when the business was removed from Glasgow to London, for what good reason we know not. In 1832, a branch from the Glasgow establishment was commenced at Edinburgh, under the firm of Wilson and Sinclair, the management of which was placed in the hands of Mr Duncan Sinclair, who had been for near the twenty years foreman over the Glasgow foundry.

U

ULVERSTONE; a town in Lancashire, situated near the estuary of the rivers Crake and Leven, 22 miles N.W. of Lancaster, and 261 miles from London. The town is of considerable antiquity, and is said to have been called by the Saxons *Ulpha's town*. It consists principally of four spacious streets, the houses forming which are generally well built of stone, and whitewashed. Ulverstone has long been noted for its manufactures of checks, canvass and hats. The principal exports are blue slate, got in the neighbourhood, of which immense quantities are sent coast-wise, and iron ore, obtained at Lindale. Great quantities of potatoes are raised in the neighbourhood, as the land seems peculiarly adapted to the culture of this valuable root. A canal, connected with the river Leven, was cut here in 1795. It is about a mile and a half in length, with proper basins and wharfs, and opens an immediate communication with the Irish sea. Population of Ulverstone in 1831, 7741.

W

WALKER Thomas; author of a somewhat eccentric collection of essays entitled "The Original," was born in Manchester, in 1784. His father was an extensive manufacturer there, but at the outbreaking of the French revolution, got involved in the political agitation of the day, and was tried for high treason at Lancaster. The trial is still memorable for lord Erskine's splendid defence of the accused, which obtained his acquital. Young Walker, after graduating at Trinity college, Cambridge, studied for the law, and was called to the bar in 1812. In 1829, he was appointed one of the magistrates of Lambeth street police office, and till his death discharged the duties of that station with great practical wisdom and efficiency. In May, 1835, he commenced his weekly periodical, called The Original, which ran the length of twenty-nine numbers. The essays were mostly on ordinary day life, but, drawing from his experience as a magistrate and one who had mixed largely in the world, the author contrived to infuse into them many new and striking observations. Mr Walker died suddenly at Brussels on the 16th January, 1836.

WEALDIN. A geological formation, so called from its existence in the Wealds of Kent. These strata are found resting above the oolite and under the chalk in the counties of Kent, Sussex, Surrey, and Hampshire. They extend in England in length to sixty miles, and are from fifteen to twenty miles in breadth; the same, or similar beds can also be traced to Boulonnois on the opposite coast of France. They rest on marine beds and are covered with marine green sand, but contain remains of fresh water animals exclusively. The beds consist of a blue or brown tenacious clay, sometimes indurated, slaty, and mixed with beds of limestone, containing shells of the paludina and cypris, and other fluviatile mollusks. Also remains of fish, turtles, as the triomyx, crocodiles, the plesiosaurus, hylœosaurus, megalosaurus, a gigantic species of lizard, approaching to the form of the existing monitor, and supposed by Cuvier to have been seventy feet in length. The teeth and bones of the iguanadon, an herbivorous reptile, somewhat similar to the guana, a lizard of the West Indies, have also been found in these beds. The teeth resemble the grinders of an animal adapted to feed on vegetable matters, and many of these are worn flat by attrition. From portions of a huge thigh bone discovered, and measuring twenty-three inches in circumference, the animal to which they have belonged has been conjectured to have been at least sixty to seventy feet in length. It appears also to have been furnished with a horn similar to that of the rhinoceros. Bones of birds have also been found, but none of the mammalia. At the point of contact of the inferior division of the wealdin, or purbek beds, with the more ancient oolite system, a very curious phenomenon is observed. The fresh water calcareous strata repose both at Portland and purbek upon the oolite limestone, called the Portland stone which abounds with ammonites, trigoniæ, and other marine shells. Between the two formations there intervenes a layer of what appears to have been an ancient vegetable soil; it is of a dark brown colour, contains a large proportion of earthy lignite, and like the modern soil on the surface of the island, many water worn stones. This layer is called the "dirt bed" by the quarrymen, and in and upon it are a great number of silicified trunks of coniferous trees and plants allied to the recent cycas and ganua. Many of the stems of the trees as well as the plants, are still erect, the former having their roots in the soil, and their trunks extending into the superincumbent strata of limestone. Traces of this vegetable earth have been observed in the cliffs of the Boulonnois on the opposite coast of France, with the stems and roots attached to it in a similar manner as those found in the English wealdin.

In the wealdin too, will be found a good illustration of the effects of denudation of the upper strata. The chalk and green sand there having been extensively swept away by currents, by which the weald clay below has been exposed, the [illegible] of birds, remains of fishes, crabs, lobsters, [illegible] shells, and fuci with portions of fossil wood, have been discovered.

WEAVING, (*a.*) In our former article, we contented ourselves with giving merely a succinct summary of a few of the processes connected with weaving. We shall now enter more into detail on the subject, both as regards its history, and the mechanical process by which it is carried on. Among all barbarous nations, weaving consists of warping and crossing grasses, and such rude materials as are most easily obtained. This is weaving in its most primitive state, and is purely darning. The long threads running from end to end of the piece, are called the warp. The cross lines interlacing from side to side, the weft. Cloth may be wrought in this way, but it must be at an immense cost of time. In the method of weaving by darning, every alternate thread of the warp must be lifted by itself to put in the weft shot, and the process is therefore very tedious. If, however, a method were invented for lifting up a certain portion of the warp at once, which is called shedding the web, to receive the weft shot, this would be a great saving of time, and this is weaving in its second stage. Weaving in this state exists among all partially civilized nations. Among the Egyptians, East Indians, Chinese, and others, weaving has existed in this state from time immemorial. These countries are admirably situated for carrying on the manufacture. They have abundance of the best material for the purpose. The silk of China, the cotton of India, the flax of Egypt, and the wool of Asia Minor, afford inexhaustible and beautiful materials for the manufacture of cloth. Hence they have been distinguished for the weaving of various fabrics, from a very early period.

The writers of the old Testament make frequent mention of the fine linen of Egypt and the purple of Tyre. Among the Chinese the weaving of silk was carried on as early it is believed as B.C. 2700, and Herodotus, the oldest of the Greek historians, who wrote B.C. 445 informs us that cotton cloth was the common dress of the inhabitants of India. "He says," in speaking of this people, "that they possess likewise a kind of plant, which instead of fruit produces wool of a finer quality than that of sheep; of this the natives make their clothes." It is obvious from his manner of speaking of the material, that he was wholly unacquainted with the nature of cotton, and likewise that it was then unknown to the nations of the west of Asia. He indeed expressly says, that the dress of the Babylonians was of wool and of linen, and that of the Egyptians of linen only; except that the priests, when not engaged in their sacred ministrations, wore a white woollen shawl. Among the Greeks at the time of Herodotus, and long before, linen and woollen cloth to a small extent was fabricated. But Europeans then, were far from being celebrated for their manufactures. The beauty of the productions of the east distanced all competition with the west. The fine figured fabrics, especially the silks of China, were bought by the Greeks and Romans at extravagant prices, even for their weight in gold. This commerce, however, was very uncertain, frequently interrupted by wars, and thus the western world was in danger of being entirely deprived of these beautiful fabrics. The silk worm was introduced into Europe, A.D. 552, (see Silk,) and the trade fostered by the emperor Justinian. It nevertheless made very little progress in Europe, scarcely undergoing any extension for 600 or 700 years. The progress of manufactures at this period was remarkably slow, and the cotton manufacture is more remarkable in this respect than even the silk. From the time in which it was first noticed by Herodotus, till it made its way to the eastern shores of the Mediterranean sea, a period elapsed of at least 500 years. The manufacture must have been carried on in the early peopled regions of the East Indies, where cotton is indigenous long before any record was preserved of their transactions. And yet by the time of Strabo, A.D. 25 the next Greek author who mentions our subject, we find that it had spread westward only as far as Persia. This historian says, that in his day cotton grew, and cotton cloth was manufactured in Susiana, a province of Persia, at the head of the Persian Gulf. And Pliny, fifty years later informs us, that it had then spread into Egypt. He says, "in Upper Egypt, towards Arabia, there grows a shrub which some call Gossypium, others Xylon, from which the stuffs are made which we call Xylina. It is small, and bears a fruit resembling the filbert, within which is a downy wool, which is spun into thread. There is nothing to be preferred to these stuffs for whiteness, and softness. Beautiful garments are made from them for the priests of Egypt." And yet this manufacture, so admirably adapted for the clothing of the inhabitants of warm countries especially, made very little further way westward for about 1300 years.

The art of weaving was unknown in Britain before the Roman invasion. On the landing of Julius Cæsar, he found the natives almost without clothing, and the little that they wore consisted of the skins of animals, a great part of their bodies being naked, and painted with various colours. The Romans established a woollen manufactory at Winchester for clothing their army, and also taught the natives the art of weaving. The party coloured stuff called tartan, which is supposed to have been first made when the natives abandoned the practice of painting their bodies, together with a pretty close resemblance of the Roman garb, have been preserved by the highlanders of Scotland to the present time. The culture of flax and the manufacture of linen are also said to have been introduced by the Romans; and the natives were afterwards taught the art of weaving several kinds of cloth, chiefly for domestic purposes, by the Saxons.

Very little further is known relative to the progress of weaving in Britain, till the reign of Edward III. when several laws were enacted in favour of the woollen manufacture, and every possible encouragement given to foreigners by that monarch to settle in Britain, in so much that, from this period, the woollen manufacture has ever been considered the staple of England.

On the continent of Europe the cloth manufacture had been carried to a very great extent; in so much, that in the year 1305, the city of Louvain, in Flanders, with the adjacent villages, was said to contain 150,000 journeyman weavers; but which lost its manufactures about seventy years afterwards by an insurrection. In 1567, the persecutions under the duke of Alva, in the Netherlands, drove many people into England, who introduced the manufacture of baizes, serges, and several other stuffs. But the great era in the history of the useful arts in Britain is about the years 1685 and 1686, when 70,000 refugees are said to have come over from France, on the revocation of the edict of Nantz, and brought with them an extensive knowledge of many manufactures with which we had been hitherto unacquainted. Of these, many went to Ireland, and numbers settled in Spitalfields, London, where they established the manufacture of silk.

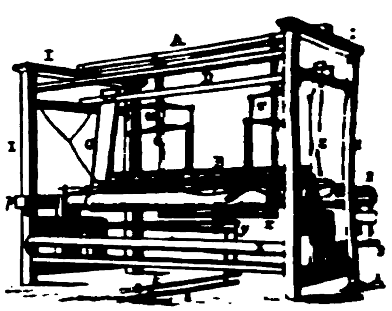
The cloth manufacture made very little progress in Scotland till after the union. About the year 1759, a branch of the silk from Spitalfields was established at Paisley, when it was soon brought to such a degree of perfection, especially in the light and more fanciful fabrics, that Paisley silks obtained a preference in all the markets of Europe; and laid the foundation for that extensive branch of fancy weaving which has since spread itself over the west of Scotland.

About the year 1767, Richard Hargreaves, a weaver in Lancashire, invented the cotton jenny for spinning wool; and about two years afterwards, the late Sir Richard Arkwright applied power to the spinning of warps, which greatly accelerated the cotton manufacture in England.

Weaving is performed upon a *loom* which is merely a frame for the purpose of stretching out the warp or web that is to be made into cloth. The web, which is of any convenient length, is kept stretched between two beams. The one beam on which the web is wound, is called the yarn roll, and the other on which the cloth is wound, the cloth beam or roll. The Indian loom is, probably, the most ancient now to be seen in action, and when we take into account its wonderful simplicity, we may well be astonished at the beautiful fabrics produced upon it. The Indians prepare their cotton for spinning, by separating it with the string of a bow, which is kept vibrating by the hand until its fibres are opened into a fine down or fleece. The method of spinning, even their very finest yarn, is still by the distaff and spindle. In weaving muslins of the most delicate fabric and texture, their apparatus is equally simple. The warp is stretched between two rollers, under the shade of some convenient tree, and over a pit that has been dug for the purpose. What constitutes their heddles is suspended from a bough; and two loops, into which the two great toes are introduced, are formed on cords below, and serve instead of treadles or other mounting. The woof is inserted by a kind of long shuttle, which also performs the office of our reed and lay, by which we shut up the woof. In weaving their more fanciful and complicated patterns, the warp is also wound upon a roll, which is frequently suspended between two trees; and, being equally stretched in a vertical position by another roll below for receiving the cloth, the woof is inserted by a long needle, which is dexterously employed by the operator in secluding such of the warp threads as are raised by our mountings. This process has some resemblance to our method of reading an extensive flower on the simple of a harness. When the threads of woof are thus interwoven with the warp, which are often linked into each other in a very curious manner, they are drawn close to the face of the cloth by another instrument similar to a comb.

In the common hand loom, the beams upon which the warp is extended, are kept parallel by the frame of the loom I I, and as the cloth beam G, winds the web off the yarn roll E as it is woven, it is obvious that to draw alike they must be perfectly true.

Fig. 1.

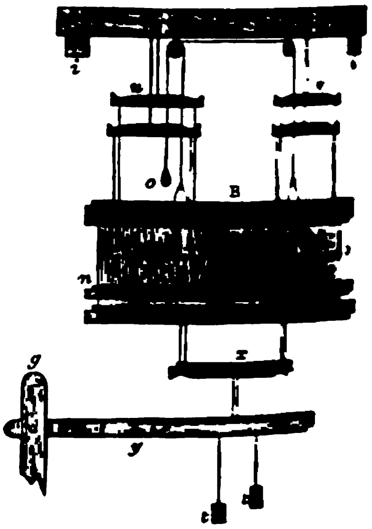


The following is a description of the [illegible] parts of the hand loom.

A, The *heddle bearer*, from which the [illegible] or [illegible] are suspended.
B, The *heddles*.
u, u, The *jacks* or *winds* attached to the upper shafts of the heddles, which enables them to move upwards or downwards, when acted upon by the treadles.
x, The *knee shafts* attached to the under shafts of the heddles.
y, The *marches* connected with the [illegible] the treadles below.
t, t, the *treadles*.
C, C, The *swords* of the *lathe* or *lay*; the [illegible] the shuttle, are seen on the outside of them; the [illegible]ing pin for driving the shuttle [illegible] the cords suspended from the [illegible] supporting the driving cord.
D, The *rocking-tree* to which the [illegible] and which vibrates upon [illegible]
F, A *lever* and *weight*, to which a rope passing round the yarn roll, is made fast in order to keep the web at a proper tension.
s, A board on which the weaver sits when at work.
p, the *pirn* or *bobbin box*.

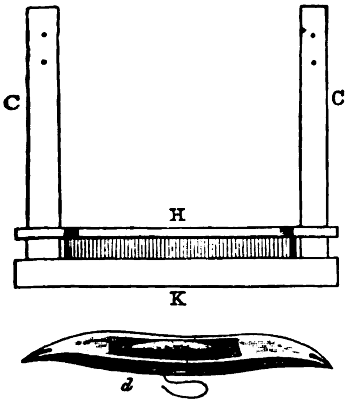
In front of the loom, about fifteen inches from the cloth beam, is an apparatus fig. 2, for the purpose of shedding the web, or opening the threads of the warp for the weaver to throw in the shuttle and interlace the weft. This apparatus is called the heddles, B, and consists of a framing of [illegible] laced over two wooden shafts. There is a [illegible] or single heddle for each thread in the web, [illegible]

Fig. 2.



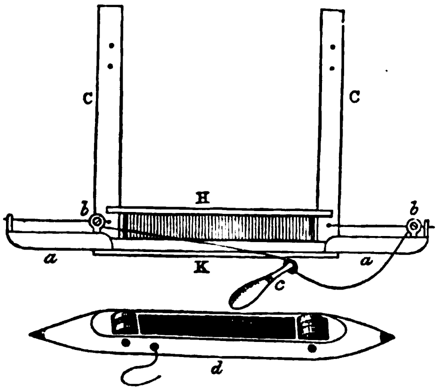
the thread is taken through a loop or eye in the middle of the heddle, represented by the medial ine *p*. It will be seen then that these heddles are in two halves or parts, called leaves; and if one half is lifted up, the web will be divided into equal portions, one thread up and one down alternately all the web over. This is the shedding for plain work. The heddles are hung upon levers or jacks v, v, to admit of the rising and sinking motion of he leaves, that shedding may take place. This s accomplished by the weaver's feet, by cords attached from the lower side of the heddles to evers called treadles *t t*, one cord to each treadle. The weaver places his feet upon these readles, and pressing down one, raises all the warp that is attached to it, and in this manner he shed is formed for the introduction of the weft shot. The weft shot is introduced or carried through the shed by an instrument called the shuttle, seen at *d*, figs. 3, and 4. This is a kind of wooden carriage, tapering at each end. The size of the shuttle varies according to the work for which it is intended. For the medium fabrics of cotton, it is about 12 inches long, 1 broad, and ⅝ thick. It is hollowed out in the middle for the reception of the weft, which is wound on a bit of turned wood called a *pirn* or *bobbin*. The weft unwinds from this pirn as the shuttle runs from the one side of the web to the other. The weaver then taking the shuttle between his finger and thumb, throws it into the shed and receives it on the point of the fore finger, at the other side of the web. He must now have some means for driving home the shot. This is done by what it is called the reed, which s like a fine comb formed of flattened pieces of ine wire. There are two threads of the warp through each of the teeth, or dents, and to give effect or strength to the reed to drive home the shot with any required force, it is fastened in a frame called the lay, lathe, or batten. The ay, represented in fig. 3, is supported from its centre by the two swords, C C, it vibrates like a pendulum, and the weaver taking hold of the cap of the reed H with his left hand, moves the lay back towards the heddles; and having formed the shed, throws the shuttle through it to the other side of the web. He then rapidly brings the lathe forward to the verge of the cloth, or fell,* and strikes home the shot.

Fig. 3.



This is weaving by what is called the hand shuttle, and weaving in its most improved state as practised in England and in Europe generally, till the year 1738, when the method of weaving by the fly shuttle was invented by a mechanic of the name of John Kay, belonging to Bury in Lancashire. This invention was a great improvement, the greatest that has been made in the mode of weaving by the hand loom, since the invention of the method of shedding the web by heddles, and yet it is very simple. Fig. 4, is a representation of this lay, with the fly-pin *c*, and fly-cord shown.

Fig. 4.



In weaving by the hand shuttle, both of the hands are employed in turn, in throwing the shuttle from side to side; or as it is called in Scotland, shuttling, and in England, picking. The hand that is disengaged alternately seizes the lay, and drives home the shot. There is here therefore a constant shifting of hands, and a great deal of time lost; besides unnecessary labour. All these inconveniences are wholly removed in weaving by the fly shuttle. The weaver has one hand exclusively for shuttling, and the other for working the lay. He gains therefore ease in working, with greatly increased speed.

The old hand lay before it was improved by Kay, is shown at fig. 3. And in referring to the representation of the fly shuttle lay, at fig. 4, the difference will be obvious. It will be seen that there is a *projection* on each side of the *lay* beyond the *swords*, which is merely a continuation of the *race* on which the shuttle runs. This is called the box *a*, and is made for the purpose of receiving the shuttle, as it comes through the shed, when the weaver drives home the shot, that it may be in immediate readiness to be projected back again. There is in the box a little piece of wood called the *driver b*, or in England the picker, which slides freely from end to end of the box on a *spindle*, and is kept steady by a tenor or tongue, working in a slit in the race below. This is the apparatus for propelling the shuttle, with which, of course, each side of the lay is furnished; and they are connected together by a *cord* called the fly cord. The weaver then has a *handle* called the fly pin, *c* fixed to this cord, with which, by a sudden jerk, he throws the shuttle from the one side to the other, as fast as his art and strength enable him. In order to diminish its friction, the shuttle, is generally mounted on two rollers. He may by this method project the shuttle in a yard wide web easily at the rate of 140 shots per minute. His speed is limited only by his strength and the art with which he can manage the yarn. The hand loom therefore, is perfected by this method so far as motion is concerned; and the gain by the fly shuttle over the hand shuttle taking all sorts of work into consideration, may be about four fold.

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* The fell is that part of the web which is being made into cloth, where the last shot was thrown in—the verge of the cloth.

Sir Richard Arkwright, as formerly mentioned, succeeded, A.D. 1769, in the application of power to the spinning of cotton. His career was so signally successful, that it drew the attention of all men to the importance of mechanical applications. He showed the capabilities of machinery, and the spindle soon became so amazingly productive, that the loom was wholly unable to co-operate with it, or consume its supplies. A loom therefore to go by machinery was eagerly sought after; but supposed to be an impossibility. Most of the ingenious mechanics in the manufacturing districts in England and Scotland, however, entered earnestly upon the subject, to invent what is called a power loom; that is, a loom wherein all the motions of weaving, the throwing of the shuttle, the working of the lay, the shedding of the web, and the turning of the cloth beam, are combined in one centre, so that when this centre is moved, by any application of power, weaving will be the result. This great mechanical problem was first proved to be practicable by Dr Edmond Cartwright, a clergyman of the church of England. He had been visiting at Matlock, in Derbyshire, and dining in the public room there, the conversation ran on Mr Arkwright and his patents. Some of the gentlemen observed, that if the trade were thrown open, it would be over done by the number eager to participate in the profits of cotton spinning, so that in forcing sales abroad we should be raising up a competition which our weavers could not withstand. The Dr said Mr Arkwright must invent a loom to go by machinery. They all affirmed that that could not be done. The Dr stated some reasons why he thought otherwise, and the subject made so deep an impression upon him, that he immediately set about the invention of a power loom, and brought one out by patent, in 1787. He took out in the year following a second patent for further improvements, and removed to Doncaster, to carry his invention into effect, but he failed in applying it. Notwithstanding that Dr Cartwright was eminent for mechanical and intellectual power, and continued to apply all his energies to the subject for many years, he was forced to abandon it, after he had expended above £30,000 in his attempts to render it available to the trade. The cause of his failure was apparently a trifling one, but in reality very important in weaving by power. It was the want of a means to prevent the breakage of the yarn, by the accidental stoppage of the shuttle in the shed. Without a good means for this purpose, the power loom is useless, and Dr Cartwright was totally foiled on this point. But the belief of its practibility was so far established, that two gentlemen, of the name of Grimshaw, belonging to Manchester, took up the subject, with the view of making some improvements upon it, but so strong was the feeling against the application of machinery to weaving, arising from the mistaken notion that it diminishes the demand for hand labour, that in 1792 the mill was wilfully set on fire, and burned before the looms were properly fitted up. This hostile feeling to the introduction of machinery retarded its progress in England; but in Scotland, where, from various causes, it was much moderated, we find the power loom making its way as a native invention, before it was abandoned by Dr Cartwright in England. Dr James Jeffrey, the present (1809) professor of anatomy in the university of Glasgow, a man of great reflective power, had been directing his attention to the invention of a power loom, at least as early as Dr Cartwright, and while he was practising in Paisley, in 1787, brought out his power loom, and wrought a piece of cloth by it, without knowing what was doing in England. Dr Jeffrey, however, did not prosecute his invention, but it was soon taken up by several ingenious mechanics, among whom was Mr [illegible], who managed a bleaching work at Milton, near Dumbarton, belonging to Mr Macdonald, [illegible] Glasgow; and Mr Miller has the very great merit of rendering the power loom a useful invention. He greatly altered its construction, and invented a beautiful means for the purpose of preventing the breakage of the yarn, by the accidental stoppage of the shuttle in the shed. This invention is called the protecter, and so effective and complete is it, that the power loom is now enabled to perform all the motions of weaving uninterrupted by accidents of this sort.

The general arrangements for weaving by hand and by power, to a certain extent, are the same.

Plate XCIII. fig. 1. is a side elevation, and fig. 2. a front elevation of a power loom of the common construction; the letters of reference are the same in both figures. A A, are two pulleys, one of which is fast, and the other loose, upon the spindle B B. The belt that drives the loom is shifted from the fast to the loose pulley, or from the loose to the fast one, as the loom requires to be stopped or set agoing. C C the lay, which moves upon the centre spindle D D. The lay is worked backwards and forwards by two cranks on the spindle B B, which are attached to the lay by two connecting rods, one of which is seen at *e*. On the spindle E, are four wipers for working the treadles; the wipers commonly used are eccentric wheels, or plates, with a friction roller on a stud, projecting from the side of each. As the spindle turns round, the friction rollers come in contact with the treadles, and force them down. In common weaving there are four treadles, and two of them give motion to the shuttle, the other two are for working the heddles, so as to produce the shed. To work the shuttle a belt, connecting the one treadle with the other, passes over the pulley L; to this pulley the picker pin *s* is attached, from the extreme end of which a cord passes to each of the drivers *d d*. Hence, as the one treadle is forced down, the pulley L will make part of a revolution, making the picker pin *s* fly from one side to the other, pulling the driver along with it, and throwing the shuttle across the web. The other two treadles work the heddles, in the same manner as in the hand loom. As the lay makes a double stroke, that is, backwards and forwards, every time that the shuttle and heddles make a single move, it will be evident that the spindle B B, must make two revolutions for every one that the spindle E makes, so the number of teeth in the wheels M and N N, must just be in that proportion. Y, the yarn beam, which has pulleys at both ends; round each of these pulleys a hair cord, reaching from the floor, takes two or three turns, the other end being made fast to the lever

X X, on which the pace weights W W hang. H H is the beam on which the cloth is wound, as it is wove. T, a toothed wheel fixed on the spindle of the cloth beam, which is driven by a pinion attached to the ratch wheel O P R. This ratch wheel is worked by the ratch P, which is acted on by the weight R. This weight is not sufficient of itself to turn round the cloth beam when counteracted by the friction cords on the yarn beam, but when the lay strikes home the weft, it must at the same time press forward that portion of the cloth that is woven at each stroke; which portion, thus relieved, is then taken up by the cloth beam. In order to raise the weight R, as it must fall a ittle way every stroke the lay makes, there is a pin *h*, projecting from the sword of the lay which takes hold of the arm S, as the lay moves backwards, and so lifts the weight up, while at the same time the two stop catches shown, catch the teeth of the ratch wheel, to prevent the cloth beam from unrolling, as it would do when the weight R was being lifted.

Fig. 3. is a detached view of the protector. As the shuttle often stops short in its progress through the shed, the use of this ingenious contrivance is to prevent the lay from getting forward to the fell unless the shuttle has got fairly across the web and entered the opposite box. In both boxes of the lay there is a wooden slot, that projects inwards through the side. As the shuttle enters the box, t forces the slot outwards; which acts on the bent lever *k*, so as to make it lift the catch V. If the shuttle is stopped in the web, it would not then press out the slot, and as the catch V would not be lifted, it would catch on the stop S, and prevent the lay getting forward, the stop S being only allowed to shift so far as to detach the handle *a*, from a notch which confines it, when it immediately (from the spring that it has) acts on the ever *f f*, and shifts the driving belt on to the oose pulley, and thus stops the loom. When things are put to rights, the attendant takes hold of the handle *a*, which is best seen in fig. 2. and shifts t back into the notch, and thus sets the loom again to work.

The motion of the loom begins by the turning of the crank withdrawing the lay from the fell; and while this is being done the shed is forming by the simultaneous action of the wiper shaft. When the lay has got about an inch and a half from the fell, the wipers for working the shuttle are so placed on the shaft, as then to strike the shuttle treadle, and by suddenly forcing it down, communicates the impulse by which the shuttle is thrown across the web. By the time, then, that the shuttle gets out of the box, the shed is sufficiently formed to receive it, and the lay continues slowly to recede backwards till the shuttle has got o the middle of the shed, when it returns again to the fell to strike up the shot.

The motions of the loom, as will be seen, are all produced by the rotation of the crank shaft; and although there is a great difference in the arrangements of the moving parts in the various power looms, there is no difference in the application of the power.

The following is a description of a power loom, of a different construction, manufactured by Messrs Sharrocks and Birch, engineers, Manchester, by whose permission the drawing has been made. It is applicable for weaving cloth, either of cotton, silk, or wool.

Plate XCIV. fig. 1. exhibits a front elevation. Fig. 2. is a plan or horizontal view as seen from above, and fig. 3. Plate XCV. is a side elevation of the same.

This power loom was invented by a native of Saxony, named Schonherr, and was imported into this country, and subsequently protected by letters patent, by Mr Hamer Stansfeld of Leeds.

It will be observed that in the three figures representing the loom in different views, there are similar letters of reference marked upon corresponding parts of the machinery. *a*, *a*, *a*, is the cast iron general framing of the loom. *b*, the beam or roller upon which the warp is wound, called the yarn beam. *c*, *c*, the heddles or healds through which the yarn threads are divided or drawn apart, to form a passage for the shuttle. *d*, *d*, the lay, containing the reed for beating up the cloth. *e*, *e*, the shuttle box containing the shuttle which carries the weft thread. *f*, the breast beam over which the cloth passes on to *g*, the cloth or work beam, upon which the cloth is wound as it is made. *h*, strap for taking up the cloth upon cloth beam. *i*, main driving pulley for setting the loom in motion. *j*, shaft and wheels for working the picking and shedding motions. *k*, cam for giving the shedding motion. *l*, cam for giving the picking motion. *m*, treadles and cams for dividing the heddles. *n*, spring for bringing back the lay. *o*, setting on rod for putting strap on fast driving pulley. *p*, motion for throwing the whole out of gear, and stopping the action of the loom when the shuttle misses its box and does not put in any weft. *q*, picking stick for throwing the shuttle.

The patent loom is stated to possess the following advantages:

1. Requires hardly half the power, but, by a more appropriate distribution of it, puts in the weft with double the force. It can be worked by the hand, foot, or strap; it has only three wheels and one wrought iron shaft two feet long, and the common power loom has eight wheels and two shafts each four feet. 2. Causes a great saving in friction and tension, the shed being only 3½ inches long, and 1½ deep. 3. Takes up less room. 4. Gives out the warp, and takes up the cloth, with a regularity superior to any other mode, and requiring no alteration. 5. Causes a great saving in pickers, and no oil for the shuttle box is necessary. 6. All the motions are so gentle and steady, that the most delicate article may be woven by this loom, and also the strongest goods. The first view of the loom would lead a person ignorant of its principles to suppose, from its light appearance, that this were impossible; but the fact of the most difficult quality of linen having been woven by it in a superior manner, and undressed too, proves the correctness of this statement; a double pressure or blow can be given if requisite; fewer threads break, say in the proportion of 1 to 20; no thin place occurs when working without weft, and altogether a decidedly superior article is produced; equal if not greater speed can be obtained, than in ordinary power looms.

The great object of all mechanical arrangements for weaving is to introduce the shot as rapidly as possible with the least injury to the yarn. This is the great rule that should guide the weaver or the mechanic in all his attempts to deal with this subject. The first consideration is the *safety of the yarn*. With this view the yarn should be stretched in the loom in such a manner as to suffer the least possible strain by the motions of weaving. The beams should be parallel, true, and placed very nearly on the same horizontal plane. The stretch between the two beams should not be longer in power looms than to give a sufficient spring to the yarn in forming the shed. As the shed is much bigger in coarse than in fine work, the length of the stretch should vary accordingly. It is of great importance in weaving fine work, to have a short stretch. Hand-looms have invariably too long a stretch; and power looms generally too short. There is a want of adaptation in both cases, arising from opposite reasons. To get as many looms as possible in his factory, the manufacturer by power diminishes his stretch without perhaps being aware of the disadvantage. The hand-loom weaver increases his stretch to get as much yarn as possible dressed at a time. The power loom weaver's yarn, therefore, snaps suddenly from insufficient spring when a knot in the thread comes in contact with the reed. In hand weaving the yarn gives way by the strain it sustains in the length of the stretch. Moreover, to keep the yarn sufficiently tight, heavy pacing is necessary, and this greatly increases the evil.

The next *consideration is to save the yarn, by dispensing with all excessive and harsh motion.* Of all the motions of weaving, the shedding of the web is the most severe on the yarn. This motion therefore should be perfectly smooth; and the shed sunk no deeper than will barely admit the shuttle. Three rods are put in behind the heddles to keep the yarn firm, and preserve the lease. The first two preserve the plain shed, and the third, which is properly the lease-rod is put in to a shed formed with two threads above, and two below the rod all over, for the purpose of binding the yarn still more together. These rods should be placed as far behind the heddles as the heddles are from the fell, but no further.

The motion of the lathe in power looms is very often bad. The best arrangement for this purpose is to hang the lathe like a pendulum, after the manner of the hand loom weavers. And to fit the lathe for working well at any speed, the length of the swords, or the radius of the arc which the lathe describes, should be increased or diminished accordingly. For narrow work with a great speed, the swords should be shortened, and lengthened for broad work where the speed must be diminished. In power loom weaving, this position of the lathe is usually reversed; it is generally placed inverted with its centre of motion below the web. The only advantage arising from this arrangement, is that it renders the loom more compact than it would be by the hanging lathe; and the motion, although not really so good, cannot be called injurious to the coarse work, for which the loom is fitted. In other power looms, such as the one last described, the lathe is without swords, and slides backward and forward on two guide rods. This motion, however, is so far objectionable, as it wants firmness and smoothness. For, let the guide rods be ever so well fitted, they must have some play, which will increase by wear, and therefore the lathe must suffer much shaking from this cause, independent of its inability from position, unsupported by leverage, to withstand the shock of the fell. The lathe in the eccentric power loom has swords in the usual manner, and motion is communicated to it by an eccentric spur wheel and pinion instead of the common crank. The motion was invented and patented by Mr Archibald Buchanan of Catrine, in Ayrshire; but had also been invented some years before Mr Buchanan by a mechanic of Glasgow, and used in the north of England for the weaving of sailcloth. It will be observed, that the motion communicated to the lathe by the connecting rod from the crank has a pause in turning the centre at each side, of nearly equal duration. Now this is not the motion that the weaver wishes. He requires a long pause in the motion of the lathe when the shuttle is traversing the shed, and a very short one on striking the shot home, and therefore the hand loom weaver, to gain speed, moves the lathe quickly from the fell, that the shuttle may be thrown into the shed as soon as possible, and then slowly retards the motion of the lay. Mr Buchanan accomplishes this motion by his means, but there is always a perceptible harshness of action in the motion of the lathe by the eccentric wheels, which is increased when the form of the wheels is not good and the speed high. Now this very motion without any drawback, is accomplished by the crank itself, merely by placing the crank shaft lower in the loom than that part of the lathe to which the connecting rod is attached for the communication of motion from the crank. The adaptation therefore, of the crank, renders Mr Buchanan's eccentric motion entirely useless.

The motion of the cloth beam is [illegible], but it is usually accomplished by the sword of the lathe. The lever which communicates motion to the cloth beam, is so placed as to be within the traverse of the lathe; which as it vibrates, pushes it out of its way, and thus gives motion to the beam. This method of taking the motion is objectionable in so far as it has a tendency to disturb the action of the lathe; it may, however, be easily remedied, as is frequently done, by taking the motion from one of the two shafts.

Weaving, of cotton especially, consists of two processes; weaving, properly so called, that is the motions for interlacing the warp and the weft, and the preparation, or dressing of the yarn for being woven. The rapid rotation of the spindle on its axes in twisting the thread, throws out by the centrifugal force of the motion the ends of the fibres on its whole surface. The threads are therefore very rough, and if brought in this state to be woven, they would entangle each other in the shedding, and the whole web in a short time would be a mass of breakage. The object of dressing is to lay these fibres along the surface of the thread, and thereby strengthen it to bear the process of weaving. This process was done by hand in the power loom, by the weaver who had the charge of it while the loom was going on. The yarn, therefore, was subjected to the action of two processes at once, and the breakage thereby was not only greatly increased, but the work likewise must have been imperfectly done. The only gain in weaving by power is by enabling one person to manage more than one loom; when one individual was indispensible to each loom, it would have been better to have allowed the weaver to dispense with the machinery altogether, and weave by the common method; and indeed, this is the result that must have taken place, but for the invention of the dressing machine. The great invention which rendered the power loom available [illegible] originated by Mr William Radcliffe, a cotton manufacturer of Melor in the neighbourhood of Manchester, about the year 1800.

In the first dressing machine, which was invented by a Mr Johnson under the superintendence of Mr Radcliffe, the yarn was dressed by being drawn over a revolving circular brush. This method of dressing, however, did not prove satisfactory, and was laid aside. Mr Johnson, afterward, on the suggestion of Mr Radcliffe, endeavoured to give motion to the brush in a manner similar to working it by hand; and in this attempt he succeeded. He caused it to slide or traverse on two spindles, one at each end, communicating motion to work it backward and forward by a strap; and as the brush was to act on the yarn in one direction only, it was lifted off the web at the end of the stroke by an eccentric. This plan was found to answer the purpose tolerably well, and machines on the principle of Mr Johnson's two inventions, with some mprovements, are those which are still chiefly used by the trade.

The dressing machine is a long frame a little wider than the breadth of the web intended to be dressed. One end and the centre of this machine s shown in plate XCV. fig. 4.; the other end, being similar, is not given. The yarn intended to be dressed, is wound upon the reels *a a a a*. In order to keep the machine working with as few interruptions as possible, there is generally about ten or twelve webs, of a hundred yards each, put upon the reels at once. A A is the frame which carries the yarn rollers *a a a a*, as prepared at the warping mill. They are fixed at successive heights, in order to keep the yarn from the one clear of the other. The yarn of all the four rollers is carried through a reed, *d*, formed of brass wires, an enlarged view of which is seen at fig. 6. Behind the reed *d* is a small roller *e*, which revolves by the friction of the yarn as it passes along, and serves to collect the warp of all the beams in one horizontal plane. *b* is a large wooden cylinder, turning on friction rollers immersed in a wooden trough *x*, which is filled with paste made of water and flour boiled together, to about the thickness of honey. The cylinder *b* is pressed by a smaller one *c*, of iron, which is sheathed with copper, to prevent its oxidizing by the paste, and covered with thick woollen cloth. As the warp is drawn forward, the cylinders *c* and *b* squeeze out the superfluous part of the paste which had been supplied to it from the trough *x* by the larger cylinder. From the cylinders *c* and *b*, the warp *f* proceeds through the reeds D D D under the roller *k*, up through the heddles *w*, and the large reed E, to the yarn beam *l*. The portion of the warp at the other end of the machine, proceeds in like manner through the corresponding parts, and is also wound on the yarn roll *l*. The lease of the web is preserved by the heddles *w*, and to prevent the threads from adhering to one another, and make it easier for the dresser to separate any broken ones, the warp is separated by the lease rods *i i i*. The brushes *g* and *h* are placed one above and the other below the yarn, that it may be more equally dressed by being brushed on both sides. They are set in motion by the levers *p* and *o*, which are wrought by the connecting rods *q* and *r* from cranks on the main shaft C. *n*, is a counterweight on the opposite end of the lever *m* *n*, to balance the weight of the brushes. The one connecting rod gives the reciprocating motion to the brushes necessary in dressing, and the other regulates their horizontal action on the yarn, and withdraws them from the warp at the termination of the stroke, to prevent chafing by brushing backward and forward. The brush is seen detached in fig. 5. and is always fully longer than the breadth of the web. The drying of the yarn is accomplished in the following manner. Two steam pipes open into sheet iron cases, indicated by dotted lines at 4, 4. F F is a fan with three leaves working between the warp, from each end of the machine on its passage from the rollers *k k* to the yarn roll *l*, and blowing the hot air from the iron cases against the expanded warp, tends to dry it very powerfully. Motion is communicated to the fan, by a strap passing over the pulley B from the pulley M, which latter is moved by a strap passing over the pulley L (seen in dotted lines) from the large pulley K, which is fixed on the main shaft C, along with the fast and loose pulley I, and by a belt over which from the moving power the whole machine is driven.

As the progress of the warp through the machine is caused by the revolving of the yarn beam *l*, it is evident that as its diameter increases by the winding on of the yarn, the speed with which the warp would pass through the machine would be thereby continually accelerated, and would not be sufficiently dried before it was wound on the beam. In order to equalize the motion, the following arrangement is adopted. On the shaft C is placed a conical pulley *s*, and on a short shaft at the under part of the machine is placed a similar conical pulley G, having its greater and lesser diameters in a reverse direction to the former, and which is driven by a strap passing over it from the cone *s*. This strap is kept in its position on the cone *s*, by the guide *w*, and by means of the handle *v*, moves the strap from the larger to the smaller diameter of the cone *s*, and from the smaller to the larger diameter of the cone G, if the speed of the yarn beam *l* is to be lessened, and the contrary way when the speed is to be increased. On the same shaft with the cone G, is placed a small pinion (not seen in the engraving,) which works into the wheel *y*. Fixed to the wheel *y* is a small bevel wheel *z*, working into a similar bevel wheel on the lower end of a shaft, sloping upwards, (indicated by dotted lines,) which, by means of the bevel wheels 1 and 2, and the catch 3, seen in the detached view, fig. 7, turns the yarn beam *l*. The small roller *k* with the bell attached to it, is the means for measuring the quantity dressed. This roller changes the direction of the yarn to the beam *l* above it; and therefore turns with the yarn. When its diameter is known, so many turns will give a certain length of piece; and as the roller works the wheel 5, so many times slower than itself, every turn this wheel makes, strikes the bell 6, and indicates the quantity required, or the length of the piece.

In other modifications of this machine, the roller *b*, in place of wood, is formed of cast iron cased with copper, and covered with cloth in the same manner as *c*. And instead of receiving its motion from the yarn-beam *l*, through the medium of the warp, it is driven by gearing in connection with the main shaft C, whilst the yarn beam accommodates itself by means of a friction wheel, to wind up the warp, only so fast as it is permitted to pass with an equable motion between the rollers *b* and *c*. The brushes move backward and forward on guide-rods fixed to a frame turning on a centre, and receiving an up and down motion from a wiper; the reciprocating motion being communicated to them in a similar manner to that of the machine already described.

The invention of the dressing machine forms a new era in the history of our subject. When it was applied to the power loom, weaving by machinery became gradually more and more successful, but neither the dressing machine, nor the loom, were brought at once into their present state. They gradually underwent modifications and improvements; changes were made in them without number, and now the two machines have been brought into such a state of perfection, that warps of 100 hanks per lb. are dressed and woven by power through reeds so fine as 1800, and with wefts of 100 to 120. There seems, however, not to be a very clear understanding in the trade, that the process of dressing should be carried on in such a manner as to strengthen and save the yarn during its performance, and keeping this object in view, to arrange means to produce the utmost possible quantity. The yarn with this view, should be placed in a position, so as to sustain the least strain in the action of dressing. The best position for this purpose is to place it in a horizontal line in the machine. The arrangement, however, in the engraving, although it is very objectionable on account of the increased strain on the yarn, is very common, and is adopted only for supposed convenience. The next consideration is, that those moving parts that come into contact with the yarn must be smooth in their action. The most important of this kind in the machine is the brush. It should be perfectly steady in sweeping over the yarn, that there may be no breakage from harshness of action. This motion in all the machines is more or less objectionable. As the yarn comes from under the action of the brush wet, and therefore very weak, nothing should be suffered to come in contact with it that can be avoided. In the most of dressing machines, as well as in the engraving before us, the rods for the lease are placed in this part of the yarn, and therefore ruffle and weaken it by unnecessary friction. This is bad arrangement, and may be easily avoided.

The dressing machine is attended by one man, and at present dresses yarn for about twenty looms. The number of looms, however, that the machine may supply, depends a good deal on the kind of goods made. In the weaving of silk, the preparation of the yarn is merely that of picking it off the knots, and spreading over it a small quantity of thin glue. The dressing machine therefore, in this manufacture, is useless, as well as in the woollen. In the linen manufacture, however, where dressing is necessary, the machine may be used as advantageously as in the cotton.

Sizing is another method of preparing the yarn for the loom without the machine. It consists merely in *hardening* the yarn by boiling it in starch, which is paste very much diluted. Various methods have been patented for accomplishing this purpose; but the following may be given as a general outline of the process: The yarn is passed through a trough of boiling size, and is led between squeezing rollers situated in the liquor, by which means it becomes thoroughly saturated. On emerging from the sizing vat, the yarn passes between another pair of rollers, and falls into tin receptacles, from which it proceeds on to the drying machine. The drying machine consists of a successive series of metal cylinders placed horizontally, heated to a very high degree of temperature by means of steam, and revolving with a regular motion. The yarn is introduced at one end of the series, and winds round about from one cylinder to another, until it is delivered at the opposite end in a perfectly dry condition. One machine will size yarn for about 1000 looms. Sizing is preferable to dressing for all yarn under No. 60, and will doubtless ultimately supersede the process with the coarser numbers. It possesses the following very important advantages, which will not be slow in recommending themselves to every practical person. It has been found by experience in some extensive factories, that sized warps are much less liable to breakage during the process of weaving than dressed ones, and consequently produce a superior cloth. It has also been found that each loom produces a larger quantity of cloth with sized than with dressed warps, a result which it is very natural to suppose, would arise from the less frequent breaking of the yarn. The process of sizing, however, has not yet been rendered suitable for fine numbers; for these, therefore, whether of cotton or linen, dressing must still be resorted to.

The power loom has been very partially applied to either the linen, silk, or woollen manufactures, and with far less success than the means are capable of yielding. To employ it successfully in the weaving of these fabrics, requires a very intimate knowledge of the subject, and more mechanical ingenuity and command of means, than is readily found in one person. Much of what has been done in this department, has been the result of experimenting with very little knowledge, and this expensive and uncertain course of proceeding has probably by reaction, repressed the introduction of improvement.

In the weaving of sailcloth, to which the power loom was early applied, it had no success. The great difficulty in weaving this kind of cloth, is to put on the weft, and this difficulty was endeavoured to be overcome by increasing the speed of the lathe in striking home the shot. More speed, however, would produce a shaking and unsteady action on such fabrics. What was wanted was *weight* in the lathe, which should be exceedingly heavy and strong. The general fault of the power loom is, that the lathe, and indeed, the whole loom is too light for the heavy fabrics. The pacing of the web, too, should be carefully attended to. Much of the beauty of the work depends on sufficient pacing. It gives a firmness and fulness to the look of the cloth, which it never has. In weaving very heavy goods, either of cotton or linen, and the rule holds in light goods as well, the pacing should be carried as far as not to injure the yarn, and thereby produce breakages. The framing of the loom should therefore be sufficiently strong, and the lathe so heavy, as not to be in the slightest degree disturbed by the stroke on the fell. The stroke should be a dead one; given when there is no opening in the shed. The shed should be opened smoothly, and the proper time for opening it is just when the lathe strikes the fell. There is a slackening of the web produced by the stroke, which, when taken advantage of in the opening of the shed, greatly diminishes the strain both on yarn and heddles. There is nothing [illegible] the weaving of silk; it is indeed easier to manage than cotton or linen. The chief thing in weaving it, is to prevent the purling of the selvage, from the facility with which the weft shot comes off the bobbin, and this can be as well prevented in weaving by power as by hand. But as the mere saving in workmanship by the power loom, is but a trifle on the yard of silk, and therefore would not greatly increase the consumption by the diminution of the cost, and as it would require an increase of capital to carry it on, and a total change of all manufacturing arrangements, it may be long before machinery is extensively used here. The power loom is making its way into the woollen manufacture but slowly. In the weaving of woollen cloth, from the springiness of the material, the stroke should not be so sharp as in cotton weaving; and in the weaving of flannel especially, the shot should be sent home with pressure rather than with a stroke; and this is the principal adaptation that is made in the power loom for woollen goods. The number of power looms at present in use in Great Britain is about 130,000, and of the hand looms, 260,000. The linens and silks, with very little exception, and most of the woollens, are wrought by hand; and in the cotton department all the checks and muslins, and almost all the fancy work. As there is more mechanical knowledge and enterprise in the cotton trade than in any other, this manufacture will be the first to be brought wholly under the influence of machinery. Attempts have been frequently made to work checks by power, but they have failed, partly by the complexity of the means for working the boxes, but chiefly by the mischief attending the interruption of the box in rising or falling by the driver or picker. When this interruption happens, something must give way, and that is the box, which is probably broken in pieces. The means for taking back the driver or picker was defective. There was for this purpose a long spring attached to the driver by a cord, and this spring, besides exerting its utmost where it was not wanted, was liable, by the sudden jerk in picking, to snap at the driver, and then the breakage was inevitable. In the improved check loom there is no spring used here. There is a light lever, of the strength of strong wire, movable on a stud fixed near the rocking tree below the web. The one end of this lever reaches up to the driver, and is attached to it; and the other end, or arm, which is a short one, extends to the picking treadle, and a little under it. When, therefore, this treadle descends, it pushes this end of the lever down before it, and the other end attached to the driver is carried to the end of the spindle over the way of the drop box. This mischief therefore, is very simply prevented; and as there is no incumbrance here in picking, the speed of the loom in working checks need scarcely be reduced. On common power-loom fabrics, 100 to 120 shots per minute may be wrought with all safety.

Fancy weaving is another very extensive and distinct branch; and is almost wholly wrought by hand. It consists of the interlacing of the warp and the weft, in such a way as to produce a flower, or figure. This figure can only be produced in weaving by two ways; by relieving the warp from the weft, and by contrasting colours and shading. Contrasting and shading can be carried to any extent in weaving; but relieving can be done only to the extent of the thickness of the thread. The weft may be thrown almost altogether on the one side, and the warp nearly altogether on the other. This is done by tweeling, and this kind of weaving is, properly speaking, the ground of fancy work The shed of plain weaving is always one thread up and one down all over; but this is never the shed in tweeling. There are either two threads up, and two down, which is the nearest to plain work, and which is the common calico tweel for printed goods, or one thread out of 4, 5, 6, 7, 8, 9, 10, or any other number up, and the rest down. That is to say, supposing the shed were to be one out of every 8 threads raised, this, which is called a satin tweel, would be wrought by a set of heddles of 8 leaves, and with 8 treadles. Seven-eights therefore of the warp would be on the one side, and seven-eights of the weft on the other. If the warp and the weft were contrasting colours, black, and white, the under side of the cloth might be of the colour of the warp, white, and the upper side black. If the weaver then had some means for raising a certain portion of the warp, so as to throw the white on the upper side, the portion raised might be so arranged as to form a pattern on the black ground, and this is really damask weaving; the principle on which table cloths are wrought. In this case, where the warp and the weft are of different colours, the pattern is formed by contrasting and relieving. There are therefore two sheds produced here. The one for working the ground or tweel, by the heddles, and the other for forming the pattern, which is done by the harness. The harness is exclusively used for forming the pattern, and is an ingenious arrangement of cords for this purpose, whereby a very great assemblage of heddles, which would be necessary for even a small pattern, is dispensed with; and the largest and most complicated figure, which could not be worked from heddles at all, is wrought with ease. When this beautiful and ingenious invention was originated is not known, but it has undergone very great improvement since the quickening and extension of the trade by machinery. The harness is so arranged on a framing called the carriage, that an assistant, usually a little boy, standing at the side of the loom, can draw the cords and thereby raise the yarn. This could be accomplished, it is apparent, by attaching cords to the yarn, and placing a pulley case on the carriage, to change the direction of the cords to where the boy stands, at the side of the loom, and this is precisely what is done. The cords that come over the pulleys are called the tail, but as it would require another arrangement of a similar kind, to change the direction of the tail from the horizontal to the perpendicular, for the convenience of being drawn by the boy, and as this would greatly increase the tear and wear by friction, it is dispensed with by extending the tail 3 or 4 yards beyond the loom, and attaching to it perpendicular cords, so that when they are pulled, the tail is drawn down, and the yarn raised. The perpendicular cords are called the simple. The simple then represents the whole of the warp. But if there was one cord for each thread, the number of cords would be inconveniently great, and this is obviated by *classing* them at that part of the cordage that extends from the yarn to the tail. This part is called the *neck*. Each cord of the neck is attached to a copper eye, called the mail, to the under part of which, by a short cord, a piece of lead wire is hung. Through this eye the yarn is taken; and there is either one, two, three, or four threads, according to the kind of work intended to be made, taken through each. The number of mails will therefore vary according to the breadth and fineness of the shawl; but whatever is the number, 2, 3, 4, or 5000, there must be a cord for each mail. Above the mails the cords pass through the holy board. Its use is to keep the yarn, though drawn in the sloping direction of the pulley-box, in a perpendicular line, the holes are also bored in diagonal lines to prevent the yarn from standing in stripes. The board is then spaced off, and the cords divided into parts, and one neck cord from each part is taken and tied to one tail cord. The number of simple cords will then be reduced to the exact number of neck cords in the part, ten rows of which with five in each row gives fifty, the number which is called the tye. The harness then, after being tied, presents the mails ranged in a horizontal line for the reception of the yarn. The weaver draws the yarn through the harness, and the heddles, and then through the reed, and fastens it in front to the cloth beam. The next operation is the mounting of the heddles. For damasks, the work to which we are chiefly referring, the heddles consist usually of eight leaves, and the tweel a satin one, that is to say, one out of the eight leaves rises with an eighth part of the warp which is not raised at the time by the harness, and at the same time one sinks with an eighth part of the warp which is raised by it. This is accomplished by having a treadle to each leaf, and two cords attached to it from different leaves, one cord raising a leaf, the other sinking one alternately over the tweel. The heddles are suspended from levers, which are again counterbalanced by long levers attached to them by cords. The short levers or marches, as they are called, are interposed and attached to the heddles below to keep them firm and *sink* the shed. There is then one cord taken from the short march, and attached to the treadle for sinking the shed, and another from the long march to the same treadle, to raise it.

The next operation is to *read on* the flower intended to be woven. The pattern is first drawn on design paper, that is, a paper divided into a number of little squares of equal sizes, by lines crossing each other at right angles, which are in turn divided into larger squares called designs, each containing 8, 10, or more of the smaller spaces. Rows of the little squares may be considered as so many lines, those running from the bottom to the top of the pattern representing the warp, and those that run from side to side the weft. The perpendicular cords of the simple represent the whole warp, and therefore their number, and the lines in the breadth of the pattern, must be exactly the same. The paper is then placed in a frame, with the simple spread exactly to correspond with the lines in the design. There is a thin slip of wood, which presses the paper close to the simple, and guides the eye over the line in reading. This slip is placed in commencing to read at the foot of the pattern just above the first line, and the reading on of the pattern consists merely in taking up the cords of the simple that correspond to the coloured squares in the line across the paper, and inserting a cross thread to separate them from the rest. He then proceeds, running his eye from the right to the left of the pattern; saying mentally, take 9, and pass 10; take 6, and pass 2; and take 2 designs and 3. These simples are then lashed together 3, or 4, in a take, or tail. This forms the first line, then a second is taken in like manner, till the whole is transferred to the simple. The lashes are then strung alternately on two cords called the gut-cords.

When the weaver has got all the draw, and the lathe on, the loom is mounted, and if he has got the yarn dressed, all is ready for work. He then sets himself on the front of the loom, with his feet immediately above the 8 treadles, and commences weaving by treading the first treadle with the right foot, which raises the shed, he moves the lathe back with his left hand, and draws the picking pin to throw the shuttle with the right. The boy then draws the first lash, and the weaver throws the shuttle through the shed, and goes over the treadles working four, six, or eight shots according to the design, before the boy changes the lash. He has then wrought the little squares of the first line in the pattern. The boy then drops the cords, which are caused to fall quickly by the pieces of lead wire suspended from each mail. He instantly raises the next lash, and this he does so quickly, that the weaver does not require to stop the process of shuttling. The harness shed here raises the warp in stripes; and if the weaver threw in the shuttle without raising the heddle shed, the shot would be floating from the one stripe to the other, wholly unattached to the warp. The heddle shed therefore, by raising one eighth of the warp, and at the same time by the sinking and depressing one eighth part of that raised by the harness in succession, thus binds the whole together, but throwing the weft chiefly on the upper side of the web.

This is damask weaving; the principle on which table linen is wrought, and a great many shawls, chiefly for the foreign market. When the fabric is well made, it is both very durable and very pretty. Both of the sides of the kind of cloth may be said to be right. The figure is on the one tide, and its counterpart on the other. Damask weaving, however, although forming the basis of all harness work, is in itself very defective in expression. It cannot portray a rich efflorescence. Whatever is the colour of the weft it is all incorporated more or less in the ground; it therefore suffuses colour, and from its deficiency in shading and deepening, it can do little more than exhibit a bare outline.

This defect in shading is indeed inseparable from the principle of damask weaving, where the weft, whatever may be the number of colours used, is all interwoven with the warp. But if instead of this arrangement, we have two kinds of shots, one exclusively used for the spotting on the pattern, and the other for the ground, which is merely for the purpose of keeping the spotting shots in their places, we have the principle of full harness mounting, on which all rich and extensive patterns are wrought, and this principle gives us inexhaustible resources for pictorial effect. The ground in this case, therefore, is a kind of texture or net work, between the meshes of which the spotting shots are thrown in, to form the pattern; and in the interstices between the pattern where they are not needed for this purpose, they float on the surface of the cloth, and are cut off after the piece comes from the weaver. In weaving this sort of work, the weaver commences by throwing in a ground shot on the tweel, and when this is done the boy draws the lash for the spotting shot. This shot is then thrown, and the lash for the next spotting shot of another colour is raised and thrown in like manner, and so on for as many spotting shots as may be used in the pattern, when the weaver closes them all in with a ground shot. In this kind of weaving, therefore, the spotting shots, however numerous, add nothing to the length of the piece. They merely increase the thickness and colouring of the pattern; and hence the value of the shawl, as a piece of work, depends on the number of spotting shots between each ground one. Those spotting shots that are used continuously over the whole pattern, are called *covers;* but when used intermittingly, or partially, they are but parts of covers. As the weaver is paid so much per cover, and in proportion for a part, and as the material used is likewise in proportion to the number of covers, the manufacturer who is a severe economist, endeavours to give effect with as few covers as possible. This is always more or less evident in cheap shawls.

Certain parts of the pattern may have several covers, but these not being continuous, nor long wrought together, are but parts of covers; and though there may be many colours, there may be few covers. In some rich patterns there are as many as 10 or 12 covers, and of course as many shuttles besides the ground one, constantly used. But work so rich is not frequently made. The common stock of shawls in the shops runs from 4 to 6 covers. In this sort of weaving, where there is much changing of shuttles, the weaver, to enable him to do so easily, uses a shifting box lathe, in which there is a box for each shuttle. In these fine patterns on the full harness, where there is but one thread in the mail, each thread represents one of the small squares on the design paper, and there must therefore be a great number of simple cords, and a great many lashes for the large patterns so frequently met with in this style of work. This renders the mounting expensive; and the manufacturer endeavours with a less costly apparatus to imitate the full harness. He reduces, if not objectionable, the size of his pattern, and by increasing the number of threads in the mail to two, he diminishes both the number of simple cords and lashes. This is called the split harness, and brings us to the intermediate between the full harness and the damask, of which there are a great number known by different names, and distinguishable by some peculiarity in style, or manner of weaving. The split harness is woven with two shots on the lash, and although, in the outline of a curve, or the leaf-stalk of a flower, it will have rather a serrated uneven appearance, it is sufficiently fine for the Indian style of work, and indeed for the most of patterns which are made. The principal seats of his manufacture are Norwich, celebrated for the elegance of the style of its shawls, and Paisley, whose weavers are unequalled for a thorough know-edge of harness weaving; and Glasgow, on which Paisley chiefly depends; and Edinburgh, where ome exceedingly good shawls are made: and Covenry, chiefly famous for the manufacture of ribbonds. Manchester likewise has a little of this trade, and everal kinds of fancy goods are made in Dublin and he north of Ireland.

In our article Paisley, we noticed a peculiar kind of shawl called Cheneille manufactured at that lace, and which for a considerable time was very much sought after, though now it has fallen considerably into disuse. For the invention of this beautiful kind of manufacture, we are indebted to Mr Alexander Buchanan of Paisley, the inventor of several other useful improvements.

These shawls, which have also been denominated Kamschatkas, derive their beauty and lustre from the peculiar mode of preparing the weft, and the ingenious manner in which the colours are afterwards arranged: in so much, that a pattern which would require a large harness as an imitation shawl, can be woven without any other apparatus than the ground mounting and two treadle feet. The weft, which is called Cheneille, is prepared as follows:—A Turkey gauze warp, of net yarn, is woven in a 1200 reed, with a twist or splitful in every fifth interval, the weft being either silk, cotton, or worsted, according to the kind of shawls to be manufactured. When this fabric comes from the loom, it is cut up by a machine, in the centre between the splitfuls of warp; and, after receiving a little twist, to throw the ends of the cut weft into a spiral direction, it is ready for the weaver. The warp of the shawl is likewise a Turkey gauze, the same as that which is the foundation of the weft; so that, when a sufficient quantity of Cheneille has been produced from a warp, it is customary to make shawls of the remainder.

In weaving these shawls, one shot of the Cheneille is thrown in, and three of common weft, whether silk, cotton, or worsted; and the fibres of the Cheneille, projecting in all directions, gives the fabric the appearance of a fine glossy shag, showing the pattern, when figured, alike on both sides.

When the shawls are to be of one uniform colour, only one kind of weft is necessary; but when they are to be figured, different colours are employed; and these are woven in spaces adapted to the different parts of the design. The pattern is first painted on design paper, and coloured as for an imitation harness. Each space of the design, or that which corresponds to a ground lash with its different covers, is again painted on a separate slip of design paper, but two spaces are here covered to make them better seen by the weaver, leaving a blank space on each side. These slips are all numbered to prevent confusion. Suppose, then, a web of trimmings were to be woven, with eight repeats in the breadth of a yard; for the first shot of Cheneille we take the slip of paper, No. 1, and find that, by reading it as for a simple, there are 2 spaces yellow, 1 white, 4 red, 2 yellow, 1 black, 2 white, &c. the weaver works a space of each of these colours on the warp, agreeably to its respective size on the slip of design paper; which, when finished, must be exactly the breadth of the trimming. For a guide to the weaver, the slip of paper passes through the reed, and is fastened at each end to a piece of tape by a bit of rosin, the one behind the mounting hanging over the warp roll and kept tight by a small weight, and the other fastened at the face of the cloth. The weaver then has only to change his shuttles by shifting the boxes of the lay at the end of each coloured space, as pointed out by the design. The slip marked No. 2 is next put into the reed for the second shot, and the colours woven in the same manner, but in the reverse order of the first, as the one is thrown in from the right hand and the other from the left; and so on till the weft for the whole pattern is finished. The weft is cut in lengths of eight yards, being the quantity usually wound on one pirn; and this will make eight shots of a yard wide web, and the pirns are taken in succession, agreeably to the numbers of the slips of design paper, and the colours are placed in the manner formerly done in setting the weft of clouding. This species of weaving is likewise well adapted to the rug and carpet manufacture.

The chief inconvenience in the weaving of shawls arises from the dependence of the weaver on the draw boy. He is wholly incapable of proceeding without him, and as much of his success depends on the ability and management of the boy, he is frequently a source of great uneasiness to the weaver. An invention, therefore, to enable him to draw the harness shed by the process of weaving, and thereby dispense with the boy, was much wanted, and eagerly sought after. Various methods for this purpose were invented and tried by the trade, but were attended with little success, till the introduction of the French, or Jacquard loom. This invention was originated, and made by M. Jacquard, of Lyons, in 1800, and forms a new era in harness weaving. It is one of those beautiful imbodyings of mechanical conception that result from a full and comprehensive view of the subject, by a master in design. Notwithstanding its great value to the weaver, the inventor of this beautiful and simple machine was more than once exposed to assassination, in consequence of the prejudice of the workmen against his machine. Three attempts were made upon his life—he was obliged for years to hide himself from the vengeance of the labouring population, and his machine was broken up in the public place, by order, and in the presence of the authorities appointed to watch over the trade of Lyons. The ignorance and prejudice which caused the silk weavers to destroy a means of assistance to their labours, capable of being made a great source of benefit to themselves, was not dispelled till the French began to feel the effects of foreign competition in their silk manufacture. They were then forced to adopt the Jacquard loom, which led to great improvement in their silk weaving, and at the present time above ten thousand looms are at work in Lyons. M. Jacquard not only lived to see himself reinstated in the affections of his citizens, but was pensioned to the extent of one thousand crowns yearly, and became the pride and boast of the operative classes.

The progress of the introduction of the machine into this country was very slow at first, from the same prejudices which operated against it in France, but it is now extensively adopted in all the manufacturing districts of England for weaving the fabrics to which it is suited. In Dunfermline in Scotland, a place long celebrated for its manufacture of damask table-linen, the machine was introduced about the year 1825, and so well was it found to be suited for that sort of fabrics, that there is not one of its 2000 harness looms unsupplied with a machine, and for weaving very wide table cloths, many have two, three, and a few have four machines on one loom. In Glasgow and its vicinity, they are also increasing very rapidly, the great reduction in price of the machines, which are now manufactured at less than a third of what they were originally charged, having given a wonderful stimulus to their introduction into general use; so much so, that in a few years they will entirely supersede the draw-boy in the manufacture of goods of ordinary sized patterns. In the larger looms for shawls, so many colours are employed, that the price of the cards necessary to produce the pattern may for some time retard the introduction of the machine into that branch of the manufacture, consequently we find that in Paisley where the [illegible] fabrics are the staple trade, its use has not been extensively adopted.

The inventors of all the plans that were previously tried to supersede the boy, endeavoured to adapt their contrivances to the loom just as they found it, with all the details fitting it for manual operation. It could not, therefore, be otherwise than complicated and expensive, circumscribed and limited in its application. M. Jacquard, in full mastery of his subject, swept away all the details that were added merely to enable the boy to act upon the harness, that is, the lashes, the simple, the tail, and the pulley box. What he wanted was to raise any given number of the neck cords, by the weaver's treadle, with the least possible inconvenience in weaving, and we shall see how well he accomplishes his object. On the top of the loom above the harness, is fixed a frame having at its under part a board pierced with eight rows of holes, fifty-one in a row. Through these holes, attached to eyes on the ends of an equal number of perpendicular hooks short cords descend, to which are tied the whole neck cords of the harness, the eyes of the hooks resting on the board, and supporting the whole. The hooks pass upward through eyes in as many needles placed in eight horizontal rows one above another, the eyes allowing the hooks a small backward and forward motion, sufficient to permit them, when necessary, to be pushed back out of the way of the lifting bars. One end of each needle is caused to protrude through the side of the frame by a spiral spring, on which its other end rests, consequently carrying the hook with which it is connected in that direction. Above this is a movable frame in which are placed horizontally, and at right angles to the needles, eight flat iron bars, corresponding with the eight rows of hooks, which are slightly pressed against the bars by means of the springs acting on the horizontal needles, the curved part of the hooks being just above the bar, ready to be lifted by it when the frame is raised. The flat sides of these bars are made to incline a little out of the perpendicular toward the hooks, those which are to be raised being thereby caught with more certainty by the bars on their [illegible] and when the frame descends, the tops of those hooks which were not raised are pushed back by coming into contact with the inclined side of the bars, and by this means getting into their original position above them, in readiness to be lifted when required. It will be thus perceived, that as each hook passes through an eye in one of the horizontal needles, that if any of their protruded ends were pushed back, the hook connected with each one would be carried along with it out of the way of the bar, and if the lifting frame was now raised, none of those pushed back would be taken up by it. In order to raise any required number of these hooks, with the cords and warp attached to them, the following apparatus is employed. A four-sided roller or barrel is suspended in a swinging frame exactly opposite the ends of the needles, and having each of its four sides perforated with holes answering to them in number and position.

into the perforations in which their ends would enter if the roller was applied to them, thereby allowing the hooks in connection with them to remain unmoved. An endless band of cards is made to revolve over this roller, each being exactly equal in size to one of its sides. These cards are pierced with holes opposite the needles connected with the hooks wanted to be raised, and when the roller with the card on its face is pressed to their ends, they pass through the holes in the card into the perforations in the roller, and are raised on the elevation of the frame carrying the lifting bars; the rest of the needles being prevented by the card from entering the roller, are pushed back, carrying the hooks out of the way of the bars. The next motion of the treadle by the weaver causes a quarter of a revolution of the roller, and presents another card to the ends of the needles, and so on, until all the cards have revolved, which completes the pattern; and which goes on to be repeated by the further working of the loom. The various motions of the machine are all produced by the action of the weaver's foot on one treadle, which communicates with levers connected to its moving parts, causing a vibratory and rotatory motion of the roller, a revolving of the cards, and the raising of the movable frame with the lifting bars.

Since the introduction of the Jacquard loom into this country, considerable improvements have been made upon it. The following description of improvements by Mr Jennings, along with the accompanying engravings, we extract from the "Transactions of the Society of Arts, Manufactures and Commerce."

Mr Jennings' improvements consist, first, in a method of reducing the height of the French loom, which, in its original state, is eleven or twelve feet, to about eight feet, and thus enabling it to be put up without inconvenience in the low rooms occupied by the weavers in Spitalfields; and secondly, in a new and far superior method of lifting the cords of the harness, and thus materially diminishing their friction on one another and the labour of the weaver. Both these improvements are the subject of Plate XCII., of which fig. 10 represents the former, and figs. 1 to 9, inclusive, the latter.

Fig. 10 is a back view of the frame *a a* of a French loom, to show the means by which it may be lowered to act under an ordinary ceiling. For this purpose the swinging frame, which required to be suspended so much above the frame *a*, is removed, and the revolving bar *n* is carried by two horizontally sliding bars *y*, one at each end. These are made to slide out and in by inclined metal straps *w w* on the vertical sliding bars *s s* while they raise and lower the lifting frame *d d*. *t t* are levers which, being connected with the treadle, lift the bars *s s*. The inclined bar or strap *w w* passes between friction rollers on the sliding bar *y*. The revolving bar *n* must be carried out enough for its corners, while revolving, to clear the pins *f f*; but this alone would not be enough to make it revolve, and to give it enough would require the straps *w w* to be much more inclined, which would increase the friction and make it hard to raise; therefore the retaining hook 5 6 is mounted on another bar, which is suspended from a pin 7, while its lower and inclined end 8 passes between two pins *g g* on the bar *s*, so that, when the bar *s* rises, the square bar *n* is carried out enough to clear the pins *f f*, and the retaining hook 5 is drawn inwards, and pulls the stud 2 sufficiently in to cause a quarter turn. A ⊏ -shaped slide 10 10 is mounted on the bar *y*, and urged against the bar *n* by the spring 11: this makes the bar present the face with the card on correctly to the wires: the retaining hook 5 is double, and kept upwards by a small preponderance of the weight 6, but, if pulled down, the under hook catches the pins, and will cause a return of the bar *n* if required. 12 12 is a wire sling in which the cards 13 pack themselves and keep sliding down on the near side, while they are continually in the act of being drawn from the farther side over the rollers 14, 15, 16. The cards, as they return over the rollers 18 and 19, are drawn down by the weight of the portion 17, which, in the real machine, instead of only three cards, as shown in the plate, consists of a sufficient number to overbalance the preceding ones.

Fig. 1 is a side view of the new method of lifting the cords of the harness, and fig. 2 a front view; fig. 3 a part of the side opposite to fig. 1. *a a a a* the frame; *b b b b* the 4080 or more cords to be lifted in varying alternation; they are all supported by the board *c c*, through which they pass, and are tied in knots at top to prevent their return or dropping through: they next pass through the perforated board *d d*; this is the lifting board, and slides up and down in the frame *a a*, therefore all the cords have, just above the board, knots *e e*, fig. 3, by which they are lifted; they then pass through the eyes of the sliding wires *f f*, fig. 2, and, lastly, through the perforated board *g g*, and then are tied at *h i* to the 4080 strings *j j*, which pass through the compass board *k k* to the silk: they are tied in what is called the Norwich tie; each cord lifts ten of the strings *j j*, the front cord at *h*, fig. 2, lifting the ten front strings *l l l*, that at *i* the ten front strings *m m m*, and the six intermediate cords the six intermediate threads between *l* and *m* of the ten sets. In fig. 1 each line *b* represents eight cords, but, in fig. 2, each of the lines *b* represents fifty-one; and between *j j*, fig. 1, are fifty-one strings, each representing eighty strings, so that there are fifty-one clear layers of eighty strings each descending to the compass board *k*: these all can rise or fall without any sensible rubbing against each other. The sliding wires *f f* have no springs to protrude them, the weight on the cords *b b* being made to do it: for this purpose the holes through the boards *c* and *g* are made forwarder towards the revolving bar *n* than the corresponding eyes of the wires *f f*, so that the pressure of the weights on these cords tending to draw them straight, protrudes the wires: and the better to regulate the force with which they shall be protruded, the boards *c* and *g* are made to slide in the frame *a a* in order to adjust it. The varied perforations in the endless band of cards, a portion of which, from 4 to 13, is shown, being brought in succession by the revolving bar *n* and pressed against the end of the wires *f f*, determines which of the cords *b* shall be pushed in and which left out: the cords *b b*, while their wires *f* are not thrust in, pass through slits in the board *d d*, which are too narrow to let the knots pass; therefore those cords are lifted, but the slits terminate in round holes, shown in fig. 4, through which the knots can freely pass (some of them are shown in figs. 6 and 7 enlarged. When the wires are thrust in, they bring the knots on the corresponding cords over the holes, so that the board *d* can go up without lifting them; but as lifting this board also removes the revolving bar *n* which kept them back, those cords can again fall into the slits when above the knots; therefore, to prevent the knots catching on the under-side of the slits while the board descends, the round hole is elongated or sloped on the under-side as far as the slit, as shown at *o* in the section fig. 7, by which all catching is prevented, and the board passes the knot freely. Figs. 6 and 7 also show the conical recesses or chamfers over the slit in which the knots that are to be raised always fall, and are retained from any possibility of slipping out or off. Figs. 4 and 5 show the metal corners *p p* of the lifting-board *d;* the recesses in the four posts of the frame *a a a a* in which they slide are also faced with metal. This board, when down, rests on the two cross bars *q q* of the frame; they are faced with leather, and the under part of the two ends of the board *d* are also faced with leather at *r r* to soften the drop. *s s* two links by which the board *d* is lifted; *t t* the forked lever which lifts it; *u u* the bolt or fulcrum on which the lever turns; and on the other end of the frame is a hole *u*, through which the bolt may be put to remove the lever *t* to that end, if its situation so requires: *v v* the bolt which connects the links to the lifting board and carries the roller *w*, which, as it ascends and descends in the bent iron strap *x*, alternately pushes out and brings in close the frame *y y*, which carries the revolving bar *n n*. *z z* the screw centres on which the frame *y* hangs; by these the revolving bar *n* is adjusted longitudinally, to coincide with the ends of the sliding wires *f f.* At the bottom of the frame *y y* are two screws by which the height of the bar is accurately adjusted. Fig. 8 is an inside view, showing the adjusting piece which receives one of the pivots of the bar *n*. 1, 2, 3, 4, the corner pins by which the bar is caused to revolve as usual; 5, 6, the hook which always retains the outer pin while the bar goes out, and causes a quarter turn each time: this brings the next card in succession to meet the sliding wires. 7 a bottom hook tied to the upper one, so that, when the hook 5 is raised by pulling the string attached to its tail 6, it raises the hook 7 into contact with the pins: by this action the bar *n* may be made to revolve back again the other way, if such a return is wanted. 8 8 two slides shaped like an inverted ⊥; these are urged down by the springs 9 9 on the revolving bar *n*, and firmly retain it so as to present the face accurately to the wires.

Fig. 3 shows part of the longitudinal wires 10 10, on and between which the wires *f* slide; 11 11 11 vertical wires which pass through the loops, and limit the motion of the wires *f f*. Fig. 9 shows two of the sliding wires *f f* supported by the wire 10 10.

Thus, the action of one treadle connected with the lever *t*, both lifts the cords *b*, pushes out the bar *n*, and gives it a quarter turn, which presents the next face with the next card on it to be pressed against the ends of the wires, the blanks pushing in the wires opposed to them, which prevent those cords from being lifted, the weaver having nothing more to do with that operation than merely to move the treadle and throw the shuttle.

But perhaps the greatest improvement upon the Jacquard loom has been made by Mr Morrison of Paisley, in his adaptation of the machine to the harness work of that town.

Tweeled patterns, in the India imitation shawls give the fabric a finer appearance and texture, and bring out the colours more brilliantly than without the tweel, but the harness to effect this purpose must be made upon a most extensive scale, and is of course very expensive. Mr Morrison saves much of this expense by means of a very simple but ingenious piece of mechanism, which works with the greatest ease, and is only one half the size of the original Jacquard machine.

Mr Morrison has also introduced another improvement of very great importance, to understand which it is necessary to mention that in a great proportion of the shawls manufactured in Paisley the *lashes* are almost always twice drawn. Thus, a pattern of six covers, if the lashes are twice drawn, require twelve cards, that is to say, the second six cards, would be cut exactly the same as the first six. By this improvement only one set of cards is required, the machine causing a return of the same cards, to be wrought over again, as readily as a draw boy could repeat, by again raising the same lashes.

To accomplish this, a fast and loose pulley is placed on one end of the revolving barrel or axle, a sufficient portion of which is turned down to receive the pulley and allow it a small lateral motion. On one side of the pulley, is a projecting stud or catch which may be pushed into holes in the end of the square part of the barrel, by means of a lever and guide: and to the groove of the pulley is attached a cord having a piece of lead at its end, of sufficient weight to cause the barrel to revolve if permitted. Thus, when the catch on the pulley is pushed into one of the holes in the barrel, the pulley will revolve along with it by the process of weaving, and wind up the weight, and if the retaining hooks and *hammer* be now withdrawn, the weight will unwind the cord from the pulley and cause the return of the barrel in the opposite direction, and consequently bring the cards along with it into their original position. By disengaging the pulley from the barrel it remains at rest until another repetition is necessary. Suppose it were required to repeat six cards; the weaver would first engage the pulley to the barrel, and after having wrought the six cards, he would by withdrawing the hooks and hammer from the barrel allow the leaden weight to act and cause the barrel to revolve backward until the cord was unwound from the pulley, and the cards thereby brought back to their original position ready to be wrought over again. He would then disengage the pulley from the barrel and proceed with the work until another repetition was required, when the same process would be repeated, and the cards returned with the precision of clock work. The improvement is well suited for various kinds of work, particularly for damask sprigs, the parts between which, frequently requiring as many as five hundred cards, whilst by this method eight only would be needed.

By these improvements it will be perceived that Mr Morrison has doubled the power of the Jacquard machine in two different departments, and may be said to have perfected it for the harness weaving of Paisley. His machine is patented.

The card punching machine is provided with the same number of horizontal needles as the Jacquard machine, and to each needle is attached a small cord, on pulling which the needles protrude through perforations exactly corresponding to those in the revolving barrel or roller of that machine. Pieces of leaden wire are also suspended from the needles by cords passing over pulleys to bring them back into their former position after being protruded. In front of the perforations through which the needles pass, is placed a thick plate, similarly perforated, having a movable steel punch placed in each hole, and before this is placed another similarly perforated plate into which the punches contained in the thick plate may be pushed by the needles when the lifting cords, attached to them, are pulled. This plate is not fixed, but can be removed along with the punches that may have been deposited therein. A steel plate pierced with holes, corresponding to the holes in the other plates, is fixed on a carriage; upon this plate the card to be pierced is laid; above it is put the plate containing the punches, whose ends rise a little above the surface of the plate, and the carriage is moved under a revolving drum, or rolling press, which forces the punches through the card into the perforations in the plate beneath. The plate with the punches is now returned to its original position in front of the needles, and the punches are pushed back by an instrument that enters into every hole in the plate, it is then ready for another set of punches.

In order to perforate the cards so as to produce the desired pattern, it is first drawn of a large size on design paper, and placed in the hands of the card cutter. He places this paper before him on a frame, which is provided with vertical threads, or simple cords answering to a portion of the warp equal to the width of the design. The threads are extended over a sort of comb, having its teeth corresponding with the small squares on the design paper, on which the pattern is drawn, and leaving an empty tooth opposite every heavy line on the paper, in order to facilitate the *reading on*. He then commencing at the undermost row and proceeding in regular succession to the top, inserts cross threads under all the perpendicular threads indicated by the colours in the pattern, leaving the end of each thread to extend a good way beyond the salvages on each side. The perpendicular threads thus interlaced are then transferred to the card punching machine, the uppermost end is turned down, and each thread is attached by the end next the last inserted cross thread, in their regular order, to the lifting cords of the machine. Beginning at the undermost, the cross thread corresponding to the top row of the design is withdrawn, and an iron rod is inserted in its place. The rod is now placed in connection with a crank moved by a treadle, on pressing down which, the rod is pushed back, causing the lifting cords over it to protrude their corresponding needles and push the punches opposite their ends out of the thick plate where they were deposited into the movable one. This plate with the punches in it is taken to the rolling press, the card, pierced as already described, and the plate and punches returned to the machine; the rod is inserted on the place of the second cross thread and treated as before, and so on until cards for all the rows in the design have been perforated. The large holes in the ends of the cards into which the adjusting conical studs on the revolving roller enter, and the two holes on each edge for attaching them to one another, are made at the same time with the others, punches for piercing them remaining permanently in the movable plate. The cards having been numbered before their perforation, are laced together by cords in their order, and are then ready for the weaver. Another card cutting machine has lately been invented, called the piano machine, in using which the card cutter reads from the design, and punches the cords at the same time, without the necessity of interlacing the pattern in the simple as formerly described. This machine has in a good measure superseded the other in the cutting of cards for small patterns, where few cards only are required.

In heavy pattern weaving, where a considerable force is necessary to raise the harness shed, the fatigue to the weaver is more than he can stand, and go through with his work. The benefit, therefore, of this invention, and indeed, of all invention for manual labour, is limited by the strength to use it. But the jacquard loom is not necessarily restricted to manual labour; it is to the harness loom, what the invention of the fly shuttle is to the hand loom—a great step made in the combination of its motion, so as to fit it for being brought under the influence of machinery. The weaving of harness loom by power, is not so difficult as might be expected from the complexity of the parts. In the first place, the yarn of such fabrics is sufficiently strong to stand the action of the common power loom; and the means, therefore, so far, are already provided. The application of the Jacquard principle to the power loom, is no great difficulty. It is true the communication by cords is quite inadmissible by power, but this arrangement is easily altered; and its adaptation for the purpose comes within the sphere of common mechanism. All that a good mechanic wants, is the principle of the invention to be adopted; and here it is quite suitable for the purpose. The capability of the power loom, indeed, has been partially tested in the weaving of damasks, at Glasgow, and elsewhere. In table-linen weaving, and strong work that requires only one shuttle, and where there is not much harness shedding, the attendance on the loom is not great; and therefore one person may manage two looms, and with such work it can hardly fail of being profitable; but in the finer descriptions of goods, where there is much shading, and changing of sheds, and several shuttles used, one person will be required to each loom, and here the profit will not, perhaps, be so great. But if there were no other advantages attending the change, than the economizing of the material resulting from a concentration of purpose, and the control over the production by the manufacturer, it would be a sufficient inducement to do away with the old system of hand labour. The means, it is obvious for producing this change, are in the course of progression, and the time may be said to be within view, when the whole of the manufacture for supplying the people with clothing, will be accomplished by machinery. The inseparable benefits resulting from this change are not merely a greatly increased production at a diminished cost, but by rendering machines the labourers of society, we raise our artizans in the scale of civilization, and make them the directors of an agency that toils for the good of all.

WEST INDIES, (*a.*) In the article *West Indies* in the body of the work, (see also the article *Slavery*,) we promised to give, in the Supplement, some account of the effects of the abolition of slavery there. Sufficient time has not yet elapsed to develope completely all the results that may arise from this great measure, but it is gratifying to know, that, on the whole, the change has been accompanied with less confusion than might have been anticipated, and every month brings an increase of favourable tidings regarding the working of freedom.

On the immediate emancipation of the negroes, one main cause of difference between them and their employers was the rents exacted from them for their houses and provision grounds. The third clause of the apprenticeship abolition law gave the free labourers the use of their houses and grounds for three months; that is, they could only be ejected after a three months' notice to quit, prescribed by the act. The planters, with few exceptions, seized on this as a means of obliging the labourers to work at low wages. Instead of endeavouring to conciliate the affection of these friendless beings, by allowing them to remain in their houses at a moderate rent, they immediately issued notices to quit, or demanded rents of so exorbitant an amount, that they often exceeded the entire wages which the negroes were offered for their labour. In many cases rent for house and grounds was charged for every individual in a family. In other cases, labour was agreed to be taken in commutation of rent; but this led to endless quarrels, for managers did not scruple to turn a family of labourers adrift in order to get rid of demands for wages incurred; and when the negroes complained, they were told to seek redress where they pleased. The disquietude arising from this cause lasted for six months at least after the day of liberation, and reacted most severely on the proprietors of the sugar plantations, for, while the quarrel existed, comparatively little was done to prepare the ground for the next crop of canes, and the produce, therefore, in 1839 was about a tenth less than formerly. Indeed the estates received such a shock in the end of 1838, and the beginning of 1839, that it is calculated that it will require three years to enable them to reach their former condition. This should be kept in mind by the friends of freedom, so that they may not be drawing unfavourable conclusions as to emancipation, if, for a year or two to come, the sugar crop should be deficient, and that article should consequently bear a high price.

At length the quarrel respecting rents and wages terminated, and the negroes diligently applied themselves to their work, which, in fact, they had been willing to perform, perhaps with some few exceptions, from the very first. But it was observed that fewer labourers wrought in the fields than formerly, and that they in general wrought only five days in the week. This excited many fears, and no little clamour. It was construed into a love of idleness in a portion of the population. Those who knew better, showed that it was simply a result of freedom; it was proved that the able-bodied man who was now free, in some instances did double his former amount of labour, the excess forming a provision for the weaker beings who depended on him for support. The following is magistrate Fishbourne's report on the subject:—"During slavery and apprenticeship, one-third of the people residing on estates were considered incapable of, and were exempted from, labour. Seventy out of one hundred slaves or apprentices was considered a fair proportion. Of those seventy, probably one third was composed of the pregnant women, or mothers of large young families, the very old or very young, sickly or diseased individuals, and domestics, &c., who, if deducted, would leave about one-half of the gross strength of the estate, or about fifty effective labourers. The decrease, therefore, of the number of effective field-servants is not so large as those not acquainted with plantation economy might imagine, on being told that not above half the people on an estate now work in the fields."

On the other hand, the emancipation act effected a number of striking cures. A missionary writing from Jamaica says, "The old and infirm, who for many years did nothing, and were exempted from all labour, have suddenly become young and strong; the lame walk, and the blind see. Disease is all but fled from every estate; the hot-house, or estate's hospital, is a deserted mansion; the medicines, bottles, and parcels are all covered with dust, and the doctor on many estates almost discarded. Whole hosts of the sick, diseased, and lame have been suddenly restored; and the magic tinkle of an English shilling has wrought a cure more lasting and complete than was ever accomplished by the skill of the most learned and skilful doctor."

With regard to the question as to the comparative expense of free labour and compulsory labour, it would appear that the former will eventually turn out the cheapest of the two to the planter. Mr Grant, a stipendiary magistrate, makes some calculations respecting the cost of cultivation on a property which had at one time [illegible] slaves. The expense of free labour which it required in five months was L.240, 14s. 4d., and for the same space of time, the expense of apprenticeship and slave emergencies, would amount to L.[illegible], leaving a balance in favour of the expense required for free labour of L.484, 5s. 8d.; "and the late deficiency law required five people, besides the overseer, for militia duty, to be employed at salaries, and maintained on the property. The saving effected by the change in this particular is very great. Two book-keepers are now dispensed with. The succession of a free system has been a great relief to the owners of unproductive properties. They were bound to give the prescribed allowances to their slaves, without reference to their own profits. To illustrate this position, I can point out a property on which were settled [illegible] slaves. The lowest estimate of expenditure on their account was L.500 a year, and the possession, notwithstanding the high price of produce, has of late years regularly increased the owner's debt. Since 1st August to 31st December, the labour account has amounted to L.99, 4s. 2d. The usual cultivation has been carried on and improved; the pastures, before neglected, are cleaned; and about thirty acres of coffee, which had grown up to the state best described by 'ruinate,' have been opened. The produce, small as it is, now secured, will pay all the expenses of the plantation, and, even in this first year of experiment, place the proprietor on a better footing than under a continuance of the previous system he ever could have hoped for."

In the report of Messrs Lyon, D[illegible], and [illegible] March 1839, a similar evidence is afforded [illegible]. With regard to the assertion that the sum paid for labour is so high as to render it impossible that the [illegible] of sugar-planting can sustain it, it is only necessary to say that experience has proved that the expenditure varies from L.3, 10s. to L.5 per hogshead. The planter, therefore, has it in his power to [illegible] pute his expenditure against his profits; and, with sugar selling in the colony at 40s. to 54s. per hundred-weight, and rum from 6s. 8d. to 8s. 4d. per gallon, it may, without difficulty, be shown that the result must be extremely favourable to him."

The following is from Mr E. D. Baynes, April 3, 1839:—"In the midst of so much misrepresentation, and so much real or affected despondency on the part of the planter, the confidence of the great majority of the other classes of the community in the stability and security of property, remains unabated. Land, especially in the vicinage of towns, has risen, and is increasing in value. Mr Duncan Hamilton, of Retreat, in the parish of St John, who, four years since, assured me that he did not think he could get L.3000 for his property, has, within these few weeks, disposed of it to Mr Alexander Reid Scott, a store-keeper of Kingston, for the sum of L.10,000."

Mr Ramsay, April 6, of the same year, says—"During slavery and the apprenticeship, the jobber charged from L.10 to L.12 per acre for digging, with his slaves, or apprentices, an acre of land into cane-holes; now, at wages of 1s. 8d. per day, an acre of cane-holes may be dug for the sum of L.2, 10s. currency; at 2s. 1d. wages it will cost L.3, 2s. 6d.; at 2s. 6d. wages, it will cost L.4, 10s.; and at 3s. 4d., the highest rate of wages that I have heard of, it will cost only L.5, just one half what it cost in times past. The whole estimated expense of each negro to the planter, was from L.6 to L.7 per annum."

Another communication from Mr Grant gives a very cheering view of the effects of emancipation. "The improvement," he says, "in the moral condition of the liberated labourers since the day of their final emancipation is greater than their most sanguine well-wishers could have anticipated. There has been only one person in the house of correction for some time, sentenced during apprenticeship. On scarcely a property is a watchman kept or required, and although coffee and other produce is openly exposed on barbicues or other places, a case of theft is exceedingly rare. The church and schools are crowded, and the greatest desire for religious and other instruction evinced by the entire population. The number of marriages and baptisms increase daily. There is a great change in the apparel of the mass of the peasantry, and in their general demeanour they are most respectful. The population, he concludes, "are industrious, and are progressing in morality and civilization."

One of the ordinary stages in the progress of civil society, is the formation of free villages and towns. This stage of civilization is now to be witnessed in various parts of the West Indies. The difficulties which have arisen in regard to the houses of the Negroes connected with estates;—the exorbitant rents which have been demanded by many of the White people, on the one hand, and the unreasonableness of many of the Negroes, on the other, in refusing to pay any rent whatever, and in resisting the processes of ejection, which have been served upon them, have, no doubt, hastened on measures of this description. We trust that the result will render the Negroes more independent of the White people, and thus show the latter the necessity of treating them with justice and moderation. They will lead to the cultivation of those extensive tracts of land, which have hitherto been totally unproductive, and will furnish the inhabitants with many of the necessaries of life for which they have hitherto been dependent on distant countries. They will give an impulse and an expansion to the mind of the Negroes, when they are engaged in the cultivation of property belonging to themselves, and will, probably, be a first step by which many of them will ultimately rise in the scale of intellectual and moral worth, and of worldly respectability and affluence.

WESTALL, Richard, an artist well known for his numerous illustrations of the elegant literature of the day, was born about the year 1766. In 1779 he became an apprentice to an engraver of heraldry in London, and in this humble department of the arts, he soon so far distinguished himself as to draw upon him the attention and patronage of several eminent connoisseurs. In 1786, he commenced his career as a painter. About this period, he formed a friendly intercourse with Mr, afterwards Sir Thomas, Lawrence, and they took jointly a house in Soho Square, where they lived for several years, until their success justified their forming separate establishments. There was no professional rivalry between them, as their walks in art were quite different, and the friendship formed in their youth was never broken but by death. Mr Westall acquired distinction by making finished pictures of historical and poetical subjects in water colours, a branch of art in which he attained to a brilliancy and vigour before unknown. His pictures of "Sappho in the Lesbian Shades," of "Tubal, the first voice of the Lyre," of "the Boar that killed Adonis brought to Venus," of "The Storm in Harvest," of "The Marriage Procession from the Shield of Achilles," and many others, were much admired. These were followed by a complete series of designs, made for Alderman Boydell, to illustrate the works of Milton, and also by illustrations for the Shakspeare Gallery and Bowyer's History of England. He also produced a multiplicity of designs for booksellers and publishers, and for more than thirty years was second, perhaps, only to Stothard in the abundance and popularity of his works in that line. In 1794, he was elected a Royal Academician, the same year in which Sir Thomas Lawrence and Stothard received that honour. In 1808, he published a volume of poems, in 8vo, with designs, entitled "A Day in Spring and other Poems.' The poems display evidence of an elegant and accomplished mind. By his professional exertions, he attained a handsome competence, which, unfortunately, was subsequently absorbed in an unsuccessful speculation in foreign pictures, and some unfortunate partnership engagements. He was secured, however, from indigence by the assistance which the Royal Academy bestows on its reduced members. One of his latest occupations was giving lessons in drawing and painting to her present majesty, then princess Victoria; and the distinguished progress which his royal pupil made in the art was a source of high gratification to him. Mr Westall died on the 4th December, 1836. At his death, a maiden sister, unfortunately blind, would have been left utterly destitute, but for the duchess of Kent, who beneficently settled on her an annual pension of £100. In person, Mr Westall was below the middle size, and of a slight and delicate form. His manners were retiring, but he was highly esteemed within the circle of his acquaintance.

WYATVILLE, Sir Jeffrey, R. A., F. R. S., F. S. A., a modern architect of some distinction, was the son of Joseph Wyatt, a builder at Burton-upon-Trent, in the county of Stafford, where he was born on the 3d August, 1766. He was educated in the free school of that town, and afterwards placed with an uncle, then an architect of repute in London, with whom he remained for seven years: subsequently he entered the office of another uncle, known as the builder of The Pantheon in Oxford Street. In 1799, he joined in partnership an eminent builder, who had extensive government contracts; and continued to pursue a profitable, though comparatively humble, career, until the year 1824, when he was called upon to attend and receive personal instructions from his majesty George IV. respecting designs for restoring Windsor castle. For this more important professional object, he relinquished his pursuits as a man of business. After a visit of the commissioners to Windsor, and a liberal grant of money, the general plan of operations was settled; and on the 12th of August, 1824, the anniversary of his majesty's birth day, the first stone was laid. On that occasion, the king conferred on the architect authority for changing his name from Wyatt to Wyatville, for the purpose of separating and distinguishing the Wyatt of that reign from Mr James Wyatt, who had been much identified with the architectural works at Windsor, during the life of George III. In December 1828, the king's private apartments were completed, and on his majesty's taking possession of the castle, he bestowed the honour of knighthood on his architect. Although Windsor castle is the prominent professional work of Sir Jeffrey, there are many other buildings, in different parts of the kingdom, which have been either wholly raised, or essentially improved, from his designs. There is scarcely a county in England, indeed, which cannot show some proof of his art. For the last five years of his life, he laboured under a disease of the chest, yet never abandoned his profession. So late as the close of 1839, he designed the stables at Windsor castle, and lodges for the Sheffield and Derby entrances to Chatsworth. He died on the 18th February, 1840, and was buried at the back of the altar in St George's chapel, Windsor castle. As an architect, he was distinguished for sound judgment, and a strong faculty for arrangement under difficult circumstances.

THE END OF SUPPLEMENT.

ANALYTICAL INDEX.

INTRODUCTION.

THE POPULAR ENCYCLOPEDIA is in the hands of a large portion of the community whose books are few. With the exception of the Bible, and a few miscellaneous volumes, this Work perhaps forms the entire library of a very numerous class; and to it they naturally refer for information and knowledge on all subjects whatever. Without assuming an infallibility, which belongs neither to the present publication, nor to any other that has ever appeared, the proprietors venture to say, that no other book of similar compass has presented such various and complete information concerning all matters that are interesting and useful to the great mass of mankind. Its suitableness, in this respect, for the literary wants of those who are denied the privilege of many books, is apparent; and it was with the view of increasing its usefulness to this class of readers, that the Analytical Index was prepared.

An Encyclopedia, if constructed on legitimate principles, is, like any other dictionary, a book of occasional reference; it has indeed been made a ground of objection to encyclopedial publications, that they offer isolated modicums of information, and give that "little knowledge" which, according to the poet, "is a dangerous thing." The objection, however, loses all its weight if these detached items of knowledge are compiled with reference to one great whole;—if, in short, they form in the aggregate the sum and substance in all the grand divisions of Literature, Science, and Art. It is a mathematical axiom, that the sum of all the parts is equal to the whole: if, therefore, in the formation of an encyclopedia, the compiler be careful to omit no important details, it is merely necessary that we assort these details, and bring them into natural connection with each other, and the book then becomes not only an Universal Dictionary for ready reference, but also a methodical and satisfactory expositor, in all the departments of human knowledge. The Analytical Index which follows confers this twofold value on the present work.

An Analytical Index is very simple in theory, but presents many difficulties in the course of its construction. The same details which, taken collectively, form a methodic treatise on one subject, combine also with other details to make up a complete digest of various branches of knowledge; and amidst the items in any one branch, many will be found claiming a right to stand out prominently in connection with the minor particulars to which they relate. To explain: *Painting* necessarily requires amongst other details, that of *Colour* and its varieties; *Colour* claims also a separate place, having conjoined with it all the particulars which the term includes; *Chemistry* likewise takes cognizance of colour; and *Dyeing* would be incomplete if the articles on colour were not ranged in its analysis. Here then, is an instance in which one term, with many of its subordinates, must enter into four separate combinations. The result of this is, that to give full completeness to the Index, a very expensive and bulky appendage to the book is necessary; and to restrict the Index within moderate limits, involves the danger of omitting many secondary, yet important, generic terms. It remains for us to justify the plan we have adopted in the present case: to prove, so far as we may be able, that we have struck a fair balance between the two difficulties; and, in a few explanatory remarks, to show that the Analytical Index annexed is sufficiently adapted to the end in view.

The Index is divided into Six Sections, embracing all the great divisions of human knowledge.

SECTION I.

HISTORY AND GEOGRAPHY.

I.

HISTORY IN GENERAL.

FABULOUS HISTORY.
MYTHOLOGY.
ECCLESIASTICAL HISTORY.
[Biographies connected with Church History.—Greek Church.—Romish Church.]
CHRONOLOGY.
MISCELLANEOUS.

The particulars ranged under these several heads, make up a bold and general outline of history; and if the reader be sufficiently persevering to store his mind with these preliminary details, he will enter with great advantage upon the more extensive analysis in the Third Division of this Section.

II.

GEOGRAPHY IN GENERAL.

Oceans, Seas, &c.
Mountains.
Divisions of the Globe.
  (Africa.
  America.
  Asia.
  Australasia, or Oceania.
  Europe.)
Miscellaneous.
Geographical Terms.
Geographers.

The grand outlines of Geography are here traced for the reader, by which he will be enabled to obtain a general knowledge of the science before entering upon the extensive details which immediately follow. With reference to these two Divisions, we make one remark,—that they are intended to take in generals only, and that, consequently, no disappointment should be felt if many things familiar to the reader be omitted here, and take a more definite place in Division III.

III.

GEOGRAPHY AND HISTORY IN RELATION TO PARTICULAR COUNTRIES.

The plan adopted in the arrangement of the complicated details which enter into this Division, the most important one in the Section on History and Geography, will, we believe, present singular advantages to the reader. The object has been to give in immediate connection with the different countries, their Geography, Topography, History and Biography; so that every thing bearing directly or indirectly on the *Geography* of a kingdom or province, and the *History* of its inhabitants, might be readily consulted. Throughout this Division there will be perceived consistency of plan, but not uniformity; the latter, it was neither possible nor desirable to observe. It was not possible to give so full an analysis of many countries as we were enabled to do of our own; and it would not have been desirable to encumber the Index with an equal severity of arrangement in all cases, since the value of extensive details is proportionate to the importance of a kingdom or state in itself, or in its relations to other nations of the globe. We only add with reference to this leading Section of the Index, that it brings into one view and into natural connection, a large amount of knowledge on the most important subjects that can engage the attention of social man, and should any hypercritical examiner discover omissions,—and we do not hesitate to tell him he *may* find omissions, for we have modesty enough to admit that an Encyclopedia in Seven Octavo Volumes, cannot state *everything* belonging to *everything*,—we would, in return, beg him to store his mind with the amount of truth here presented to him, and if he do this we venture to state our opinion,—which we may do without any hesitation,—that he will become a very sufficient Geographer and Historian.

SECTION II.

LAW, POLITY AND POLITICAL ECONOMY ARMY AND NAVY

I.

LAW.

Feudal System
Courts of Law
Law Officers, &c.
Legal Instruments
Law Terms.
Crimes and Offences and
Punishments.
Eminent Lawyers and Writers on Law

The First Division in this Section, the heads of which we have given above, includes as copious an analysis of *Law* as would be obtained from the most talented and methodical work exclusively devoted to the subject. The modes of ancient and modern judicature, the constitution of courts of law, and the varieties of crime and punishment are exhibited in the most lucid manner; and much interesting matter connected with the [illegible] [illegible] will be found incorporated with the biographies of Lawyers and Writers on Law.

II.

POLITY.

III.

POLITICAL ECONOMY

These two Divisions do not assume a very important bearing in the present section; but for this there is an obvious and satisfactory reason. All matters regarding *Polity* and *Political Economy* will be found in connection with the *History* of the different kingdoms and states, in the first section, and it was considered perfectly unnecessary and tending only to superfluous display, to gather extensive details under these Divisions.

IV.

ARMY AND NAVY.

This Division embraces under a number of subordinate heads a complete treatise on Military and Naval art, together with copious biographies of the most talented and distinguished warriors and navigators of all countries, as well as of the most eminent Writers on Military and Naval tactics

SECTION III.

THE FINE ARTS.

This Section includes *Painting*, *Sculpture*, *Engraving*, *Heraldry*, and *Architecture;* together with *Music* and *Poetry*. With respect to these Divisions, we may observe, that the leading article of each is very full and satisfactory, and if in the copious details which range under it, there should seem to be an occasional omission, it will generally be found that this omission in the Index is supplied by the extensive and minute view of the subject embraced in the leading article itself. It could not be expected that all the minutiæ of art should have *separate* mention in the book, and this being the case, these minor features could not all be particularized in the Index. We may state, that the biographies in this section are peculiarly rich, and will afford much satisfaction to the student and admirer of Art.

SECTION IV.

GRAMMAR, METAPHYSICS, AND MATHEMATICS.

I.

GRAMMAR.

This Division embraces *Language*, *Hieroglyphics*, *Writing*, and *Typography*, *Grammar*, *Rhetoric*, *Logic*, and *Philology*. These several heads combine into one harmonious whole, and form a highly satisfactory compendium on one of the most interesting departments of human knowledge.

II.

METAPHYSICS.

Under this Division are included *Theology*, *Bible*, and *Metaphysics*. The details alphabetically arranged beneath these three heads take up the general subject very fully. The Biblical student and the metaphysical inquirer will derive great benefit from a perusal of the numerous articles and biographies collected in this Division.

III.

MATHEMATICS.

Mathematics.
Arithmetic.
Algebra.
Geometry.
Trigonometry.

Although the details connected with the heads of this Division are not numerous, it will be found in reference to the articles, and more especially to the heads themselves, that the various branches of mathematical inquiry are extensively illustrated and their principles thoroughly defined. Under *Geometry* and *Trigonometry* will be found excellent elementary treatises on these two subjects.

SECTION V.

NATURAL PHILOSOPHY.

This Section embraces the following Divisions:—

I.

NATURAL PHILOSOPHY.

II.

NATURAL HISTORY.

Physiology.
Animal Kingdom.
Vegetable Kingdom.
Mineral Kingdom.

III.

MEDICINE AND SURGERY.

IV.

SCIENCES.

Geology.
Chemistry.
Electricity.
Meteorology.
Optics.
Astronomy.

The extensive and interesting departments of knowledge included in general under the term Natural Philosophy, are opened up in this Section very satisfactorily. The Division on *Natural History* has been found so complete in its details as to admit all the classification and arrangement usually observed in popular works exclusively devoted to the subject. The *Sciences* also, are equally rich in their details; so much so, that the chemical articles have been highly commended by Professor Gregory of Aberdeen: and the Supplemental treatise on the Microscope called forth a letter of approval to the Publishers, from Mr Pritchard of London, a gentleman standing in the first rank as a philosophical writer and a practical optician.

SECTION VI.

USEFUL AND MECHANICAL ARTS, MANNERS AND CUSTOMS AND MISCELLANEOUS.

This Section is altogether miscellaneous in its nature. The first Division embraces the principles of *Mechanics*, an alphabetical enumeration of the various *Arts and Inventions* formerly and at present existing amongst mankind, and an analytical view of several branches of mechanical art. In explanation of the apparent deficiency of analysis in this section, it may be sufficient to inform the reader that there will usually be found under every term in the list of Arts and Inventions, a very full account and explanation of the particular art to which it refers: and that consequently, no separate details occur in the work, to admit a formal analysis. The second Division, including *Manners* and *Customs*, presents a large amount of useful and interesting information concerning the domestic and social habits, the occupations, the national characteristics, &c. &c., of mankind, throughout all countries and in all ages of the world. The third Division takes in a few of those *Miscellaneous* subjects with which the Encyclopedia abounds: and the reason why this department of the Index has not been carried to greater extent is, simply, because no very important end would have been answered by such extension.

Having briefly remarked on the several Sections of the Index and their subdivisions, it remains only for us to say, that the great object has been to classify and arrange the details in all the grand divisions of knowledge in a satisfactory manner and within a moderate space. We believe that we have done this: and as regards History, Geography and Natural Philosophy,—which certainly embrace the greater and the more useful part of human discovery and science,—we have no hesitation in saying that they are singularly complete in their class, very much more so than any candid reader could expect to find them in a miscellaneous work of comparatively limited extent. We therefore, now commend our labours to that public whose approval has hitherto cheered and sustained us through a protracted and laborious undertaking: fully convinced that as we have used every endeavour to render the work deserving of their approbation, they will duly appreciate our exertions, and judge with candour

Glasgow, }
1841. }

ANALYTICAL INDEX.

HISTORY AND GEOGRAPHY.

I.

HISTORY.

FABULOUS HISTORY.

Achelous
Acheron
Achilles
Actæon
Adonis
Adrastea
Adrastus
Æacus
Ægæon
Ægeus
Ægis
Æneas
Æolus
Agamemnon
Aganippe
Aglaia
Agrionia
Ajax
Alceste
Alcides
Alcinous
Alcmæon
Alcmena
Aloides
Alpheus
Amalthea
Amathus
Amazons
Ambrosia
Ammon
Amphion
Amphitrite
Amphiaraus
Amphitryon
Amor
Anadyomene
Anchises
Andromache
Andromeda
Antæus
Anteros
Antigone
Aonian Mount
Aorasia
Aphrodite
Apollo
Apotheosis
Arachne
Arethusa
Argonauts
Argus
Ariadne
Arion
Arimaspians
Aristæus
Arsinoe
Ascanius
Astarte
Atalanta
Ate
Athamas
Atreus
Atys
Augeas
Aurora
Bacchus
Baucis
Bellona
Berenice
Blemmyes
Bona Dea
Boreas
Briareus
Bucentaur
Cabriri
Cacus
Cadmus
Caduceus
Calchas
Calliope
Callisto
Calydon
Calypso
Cassandra
Cassiopea
Castor and Pollux
Centaurs
Cephalus
Cerberus
Ceres
Cestus
Chaos
Charon
Charybdis
Chimera
Chiron
Circe
Cleobis and Biton
Clio
Clytemnestra
Cnidus
Cocytus
Comus
Concordia
Corybantes
Cotys
Creusa
Cupid
Cyclops
Cynosura
Cytherus
Daduchus
Daphne
Daphnis
Danae
Danaides
Dardanus
Death
Deidamea
Dejanira
Delos
Delphi
Deucalion
Diana
Didymœus
Diomedes
Dioscuri
Dithyrambus
Dodona
Dragon
Dryads
Echo
Egeria
Electra
Eleusis
Elf
Elysium
Endymion
Epimetheus
Erato
Erebus
Ericthonius
Eridanus
Eriphyle
Eris
Erisicthon
Eros
Eteocles and Polynices
Europa
Eurydice
Euterpe
Fama
Fates
Faun
Feronia
Flamen
Flora
Fortuna
Furies
Galatea
Ganymede
Genius
Geryon
Giants
Glaucus
Gnome
Gordius
Gorgones
Graces
Griffin
Gyges
Hamadryads
Harmonia
Hebe
Hecate
Hector
Hecuba
Helena
Helenus

Heliades
Helios
Helle
Hercules
Hermaphroditus
Hermione
Hero
Heroes
Hesperides
Hesperus
Hippocentaurs
Hippocreme
Hippodamia
Hippogriff
Hipponous
Horn of Plenty
Horns
Hours
Hyacinthus
Hyades
Hydra
Hydriads
Hygieia
Hylas
Hymen
Hyperboreans
Hypermnestra
Hypsipyle
Idomeneus
Ilithia
Inachus
Ino
Io
Iphigenia
Iris
Irus
Islands of the blest
Ixion
Janus
Jason
Jocasta
Juno
Jupiter
Justitia
Juventa
Laertes
Lamiæ
Laocoon
Laodice
Laomedon
Latinus
Latona
Lavinia
Leda
Lethe
Libation
Liber
Libertas
Lucifer
Lucina
Luna
Maia
Manes
Mammon
Mania
Mars
Marsyas
Medea
Megara
Melampus
Meleager
Melioseta
Melpomene
Memnon
Menelaus
Mentor
Mercury
Mermaid
Metis
Midas
Minerva
Minotaur
Mithra
Mnemosyne
Momus
Morpheus
Musagetes
Muses
Myrmidons
Myrrha
Mysteries
Mylitta
Naiads
Narcissus
Nemesis
Neptune
Nereids
Nereus
Nestor
Night
Niobe
Northern Mythology
Nymphs
Oceanides
Oceanus
Oedipus
Olympus
Omphalo
Orestes
Orgies
Orion
Pæan
Pales
Palinurus
Palladium
Pan
Panacea
Pandæmonium
Pandemos
Pandores
Paris
Pasiphae
Patroclus
Peleus
Pelias
Pelops
Penates
Penthus
Perseus
Philemon and Baucis
Philoctetes
Philomela
Phœdra
Phœnix
Phlegethon
Phorcus
Picus
Pierian
Pirithous
Pleiades
Pluto
Plutus
Polyphemus
Polyxena
Pontus
Portumnus
Priam
Priapus
Procrustes
Prœtus
Prometheus
Proserpine
Pygmy
Pylades
Python
Rhadamanthus
Rhea
Rhea Sylvia
Saturn
Satyrs
Sciron
Scylla
Seclii
Semele
Silenus
Silvanus
Sirius
Sisyphus
Sphinx
Stymphalides
Styx
Suada
Sybil and Sybilline books
Symplegades
Syrinx
Talus
Tantalus
Tartarus
Terminus
Terra
Tethys
Teucer
Thalia
Theano
Themis
Theophane
Protesilaus
Proteus
Psyche
Pygmalion
Thetis
Thisbe
Thyestes
Thyrsus
Tiresias
Titan
Tripod
Triptolemus
Triton
Typhon
Ulysses
Urania
Uranus
Varuna
Venus
Vertumnus
Vesta
Victoria
Vulcanus
Xuthus
Zephyrus
Zethus
EGYPTIAN MYTHOLOGY
Anubis
Apis
Harpocrates
Isis
Neith
Nepthys
Osiris
Serapis
INDIAN MYTHOLOGY
[illegible]
SCANDINAVIAN MYTHOLOGY
Berserker
Hertha
Woden
[illegible]

ECCLESIASTICAL HISTORY

Abbot
Abbreviatori
Abelites
Abrahamites
Absolution
Acephali
Acolythi
Acta Sanctorum
Adamites
Adiaphora
Adoptiani
Adoration
Aerians
Ageda
Agenda
Albigenses
All Souls
All Souls, Feast of
Almona
Altar
Amen
Ampulla
Anabaptists
Anchorites
Andrew, St Cross of
Annunciation Day
Anomœans
Anthropomorphites
Antichrist
Antinomianism
Antisabbatarians
Apologetics
Apology
Apostasy
Apostles
Apostolici, Apostolics
Apollinarians
[illegible]
Aquarians
Arabici
Archbishop
Archdeacon
Arians
Arminians
Artotyrites
Ascension Day
Ascetics
Augsburg Confession
Baptism
Baptists
Basle, council of
Bereans
Bishop
Blessing
Bohemian Brethren
Catechumens
Cathari
Cathedral
Centuriators of Magdeburg
Chaplain
Chapter
Christians
Christians of St Thomas

- Christmas
- Church
- Church, Fathers of the
- Cistercians
- Clergy
- Conception, Immaculate
- Concord, Form of
- Confession
- Confirmation
- Congregational Churches
- Consecration
- Consistory
- Constantinople, General Councils of
- Conventicle
- Corporation, and Test Acts
- Council
- Creed
- Crosier
- Cross
- Culdees
- Deacon
- Deaconess
- Dies Iræ
- Diocese
- Diptycha
- Dominicans
- Donatists
- Doxology
- Easter
- Ebionites
- Ecclesiastical Establishments
- Epiphany
- Erastians, s
- Excommunication
- Exorcism
- Fasts
- Festivals and Holidays
- Flagellants
- Franciscans
- Fraternities
- Ghost, Holy
- Grace
- Heidelberg Catechism
- Heretic
- Hieronymites
- Hugenots
- Iconoclasts
- Independents
- Jacobites
- Jews, s
- John, St, Knights of
- Knights Templars, s
- Labarum
- Latitudinarian
- Lazarites
- Lector
- Legend
- Lent
- Litany
- Liturgy
- Lord's supper
- Lutherans
- Magdalen
- Manichus
- Maronites
- Martyrs
- Melchites
- Meleda
- Meletians
- Messalians
- Methodists
- Millennium
- Monastery
- Muggletonians
- Nazarenes
- Nicolaitans
- Non-conformists
- Offerings
- Offertorium
- Oratory, Priests of the
- Orders, Religious
- Orders, Military
- Ordination
- Orthodoxy
- Palm Sunday
- Papas
- Passion of Christ
- Paul, Churches of St
- Paulicians
- Peace, Religious
- Pelagianism
- Persecution of Christians
- Pilgrimages
- Pilgrimages, s
- Pope
- Presbyterians
- Premonstratenses
- Priest
- Primate
- Protestantism
- Psalmody
- Puritans
- Quakers
- Quietism
- Reformation
- Reformed Church
- Refugees
- Religion, Established
- Religious Liberty
- Sabbatarians
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- Seven Sleepers
- Shakers
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- Stabat Mater
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- Symbolics
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- Templars
- Thirty Years' War
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- Traditores
- Traducians
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- Truce of God
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- United Brethren
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- Adalbert
- Adalbert of Prague
- Adam, of Bremen
- Agape
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- Agricola, John
- Alban
- Ambrose, St
- Andrew, St
- Anselm
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- Arminius or Hermann
- Arnobius the Elder
- Arnold of Brexia
- Artemon
- Athanasius, St
- Athenagoras
- Augustin
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- Ausgar
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- Bernard of Clairvaux
- Beza, Theodore
- Boniface, St Bucer, Martin
- Bugenhagen, John
- Calixtus, George
- Calvin, John
- Cassander, George
- Cevennes
- Chalcedon
- Christopher, St
- Chrysostom, John, St
- Clement, Titus Flavius
- Columba, St
- Columbanus
- Constantine
- Cranmer, Thomas
- Cyprian, St Cyril
- Damascenus, John
- Denis, St
- Dionysius the Areopagite
- Dionysius the Little
- Dominic De Guzman St
- Dunstan, St
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- Francis of Paula
- Genevieve
- Gregory, Bishop of Niscœaria
- Gregory of Nazianzen
- Gregory of Nyssa
- Gregory of Tours
- Hesychastes
- Helarion
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- Huss, Hussites
- Icthys
- Ignatius, St
- Irenæus
- Isidore
- Jansenius, Cornelius
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- Jerome, St
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- John
- Justin
- Lanfranc
- Langton, Stephen
- Lawrence, St
- Luther, Martin
- Liquori, Alphons
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- Martyr, Peter
- Mary
- Melancthon, Philip
- Menno
- Momicis
- Montanus
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- Nicholas, St
- Œcolampadius, John
- Oldcastle, Sir John
- Origen
- Paris, the Abbe
- Patrick, St
- Paul
- Paul of Venice
- Paul the Deacon
- Paul, St Vincent de
- Polycarp
- Rabanus, Marcus Magentius
- Robinson, John
- Savonarola, Geronimo
- Socinus, Lælius
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- Sandeman, Robert
- Servetius, Michael
- Tertullian, Quintus Septimius Florens
- Theresa, St
- Thomas a Kemple
- Tindal, Matthew
- Tindal, William
- Ursula, St
- Valentine, St
- Vorstins, Conrad
- Wesley, John
- Whitefield, George
- Whitehead, George
- Wickliff, John
- Williams, Roger
- Wolfgang, St
- Wolfgang, Prince of Anhault
- Xavier, St Francis
- Zinzendorf, Count von
- Zwingli, Ulrich

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- Archimandrite
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Benedictines
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Alan, William
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Baius, Michael
Baronius, Cæsar
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Benedict, St
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Benno, St
Boniface VIII
Boniface, Popes
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Malagrida, Gabriel
Ricci, Lorenzo
Tellier, Michel Le.
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— Era of Alexandria
— Abyssinian Era
— Jewish Era
— Era of Nabonassar
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— Julian Period
— Era of Diocletian
— Grecian Era
— Death of Alexander the Great
— Era of Tyre
— Cæsarian Era of Antioch
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— Spanish Era
— Persian Era
— Era of the Armenians
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Ethiopia
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Foota Jalloo
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Jenne
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Nigritia
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Sahara or the Great Desert
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Senegal
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Britain, New
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Mackenzie's River
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Niagara Falls
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Magellan, Straits of
Maria le, Straits of
Multnomali
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Orinoco
Pampas
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Porto Cabella
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Popayan
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BIOGRAPHIES CONNECTED WITH SOUTH AMERICA.
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Elio, Francisco Xavier
Funes, Gregorio
Orellana, Francis

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Belujistan
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Bird Island.
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Arrowsmith, A
BarbieduBocage, J.D.
Bell, James
Busching, Anthony Frederick
Cassin
Chabert, Joseph Bernard
Delisle, William
Ebeling, Christopher Daniel
Eratosthenes
Hassel, John George Henry
Hubner, John
Mela, Pomponius
Mercator, Gerard
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  - **Arabian Sea**
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  - **Horeb**
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  - **Red Sea**
  - **Sabæans**
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- History.
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  - Assemannic, Simon
  - Haroun
  - Lokman
  - Mohammed
- Literature.
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  - Arabian Nights
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  - Zobeide
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  - **Armenian**
  - **Ararat**
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  - Abdenhoven
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  - Austerlitz
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  - Capo d'Istria
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  - Laybach
  - Lemberg
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  - Moravia
  - Pola
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  - Silesia
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- Bohemia—Topography.
  - Adersbach Mountains
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  - Austrian Empire, s
  - Military District
  - Passarowitz, Peace of
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- Biography in connection with Austrian History.
  - Baden
  - Baden, Louis William I.
  - Blumauer, Aloysius
  - Browne, Maximilian Ulysses, Count
  - Bubua, Count of
  - Chasteler, John Gabriel, Marquis of
  - Cobentzl, John Philip, Count de
  - Cobentzl, Louis, Count of
  - Collin, Henry Joseph von
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  - Dann, Count
  - Eugene, Francis, of Savoy
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  - Kamutz, Prince of
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- Statistics.
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- Fayal
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  - Amberg
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  - Munich
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  - Scipio Africanus the Elder
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Cartwright, John
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Cheke, Sir John
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Clinton, Sir Henry
Collingwood, Cuthbert
Cooper, Anthony Ashley, first Earl of Shaftesbury
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Wat Tyler
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Aikin, John
Akenside, Mark
Alcock, Bishop of Ely
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Allen, Joseph
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Ambrose, Isaac
Amory, Thomas
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Congreve, William
Cooper, Anthony, Ashby, third Earl of Shaftesbury
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Engel, John James
Ernesti, Augustus William
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Schmidt, Michael Ignatius
Schubart, Christian Frederic Daniel
Seckendorf, Louis Von
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Standlin, Charles Frederic
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Thummel, Maurice Augustus Von
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Velde, Francis Charles Van de
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Wagner, Ernest
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Willamor, John Theophilus
Winkelmann, John Joachim
Winkler, John Henry
Wolf, Arnoldina
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Zimmermann, Eberhard Augustus William Von
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Beckmann, John
Boehme, Jacob
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Edgeworth, Richard Lovell
Emmet, Thomas Addis
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Sterne, Lawrence
Swift, Jonathan
Tate, Nahum
Toland, John
Usher, James
Wolfe, Charles

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Campagna di Roma
Canosa
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Cortona
Cosenza
Cremona
Crotona
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Etruria
Faenza
Feltre
Ferrara
Fiurne
Florence
Foligno
Fondi
Forli
Frascati
Gaeta
Genoa
Guastalla
Ischia
Herculaneum
Lago Maggiore
Lago Nero
Lagoon
Latium
Lavinium
Lavona
Leghorn
Liguria
Lodi
Lombardy
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Lucea
Mal'aria
Magna Græcia
Mantua
Marignano
Marino, San
Maremme
Massa-Carrara
Menzabano
Messina
Milan
Mincio
Modena
Monaco
Mondovi
Monte Casino
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Monza
Naples
Nice
Nola
Padua
Pæstum
Pama
Pavia
Perugia
Pietola
Piombino
Pisa
Pistoia
Po
Pompeii
Ponte-Corvo
Pontine Marshes
Ravenna
Rimini
Rivoli
Romagna
Rovigo
Rubicon
Salernum
Saluzzo
Sienna
Sinigaglia
Solfatara
Spoleto
Tagliamento
Terracina
Terra Firma
Terni
Tiber
Tivoli
Tolentino
Trebia
Tuscany
Tusculanum
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Verona
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HISTORY.

Miscellaneous.

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Gondelier
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BIOGRAPHY.

Borgia, Cæsar
Calderari
Capello, Bianca
Carbonari
Charles VII.
Condottieri
Contarini
Dandolo Henry
Este
Farnese
Ferdinand III.
Fiesco, Count of Lavagna
Fonseca, Eleanor
Gherardesca
Gonzaga
Gritti
Guicciardini, Francis
Guiscard, Robert
Imperiali Lercari, Francis Maria
Lando Michel
Machiavelli, Nicolo
Maria Louisa, *s*
Massaniello
Medici
Medici, Luigi Don
Morosini, Francesco
Murat, Joachim
Orsini
Parini, Guiseppe
Pazzi
Rienzi, Nicholus Gabrini de
Sforza
Strozzi, Philip
Visconti

LITERATURE.

Adriani, John Baptist
Agnesi, Maria Gaetana
Alamanni, Luigi
Albertini, Francis
Alexander ab Alexandro
Alfieri, Vittorio
Algarotti, Francesco
Ammirato, Scipio
Andreas, Onuphrius
Andreini, Francis
Angeli, Peter
Aragon, Tullia d'
Aretino, Guido
Aretino, Leonard
Aretino, Pietro
Ariosto, Ludovico
Bandello, Matteo
Barbarino, Francesco da
Baretti, Joseph
Bembo, Pietro
Bentivoglio, Cornelio
Bentivoglio, Gui
Berni, Francesco
Bettinelli, Saverio
Biagioli, Josaphat
Bianchini, Francesco
Boccaccio, Giovanni
Boiardo, Matteo Maurice
Botta, Carlo, *s*
Bruno of Arezzo
Burchiello, Domenico
Carli, Count
Caro, Annibal
Casa, Giovanni Della
Casanova, John James
Casti, Giambatista
Castiglione, Baldassare
Cavalcanti, Guido
Cesarotti, Melchior
Chiabrera, Gabriel
Chiari, Pietro
Cino da Pistoia
Colletta, Peter, *s*
Colonna, Vittoria
Crescimbeni, Giovanni Maria
Dandolo, Andrew
Dante
Davila, Arrigo Caterino
Denina, Giacomo Carlo
Fabroni, Angelo
Fabroni, Giovanne
Facciolato, James

Fantucci, Count
Ficino, Marsilio
Filangieri, Gaetano
Filicaia, Vincenzo da
Fortiguerra, Niccoli
Foscolo, Ugo
Fracastorius, Jerome
Frugoni, Carlo Innocenzo
Galiani, Ferdinand
Ghiberti, Lorenzo
Giannone, Pietro
Gigli, Jerome
Goldoni, Charles
Gorani, Joseph
Gravina, John Vincent
Griselda
Guarini, Giovanni Battista
Jagemann, Christian Joseph
Jovius, Baul
Landinus, Christopher
Laura
Maffei Family
Maghabecchi, Antonio
Manzoni, Alessandro
Marini, Giambattista
Martyr, Peter
Mazzuchelli, Giam.
Medici
Metastasio
Mirandola, Count
Molza, Francesco Maria
Montecucculi
Monti, Vincenzo
Muratori, Louis Anthony
Nani, John Baptist Felix Gaspar
Nannini, Agnolo
Nerli, Philip
Pasquino
Petrarca, Francesco
Pindemonte, Cavaliere Ippolito
Poggio Bracciolini
Politianus, Angelus
Pulci, Luigi
Riccoboni, Lodovico
Sannazaro, Jacopo
Strada, Famianus
Tambroni, Joseph
Tambroni, Clotilda
Tasso, Bernardo
Tasso, Torquato
Tassoni, Alexander
Tiraboschi, Girolamo
Trissino, Giovanni Giorgio
Vanini, Lucilio
Varchi, Benedetto
Veneroni, John
Verri, Count Alexander
Vico, Giovanni Battista
Vida, Mark Jerome
Villani
Virgil, Polydore
Zanotti, Francesco Maria
Zappi, Giovanni Battista Felice
Zeno, Apostolo
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Miscellaneous.
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Alexander Jannæus
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Herod Antipas
Herod Agrippa
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Josephus Flavius
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Maimon, Solomon
Menasseh Ben Israel
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Balize
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Guadalaxara
Guanaxuato
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Jorullo
Mechoachan
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Santa Fe
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Tehuantepec
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Vera Cruz
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Cortes, Fernando
Guerrero, Vicente
Hidalgo, Miguel
Iturbide, Augustin
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Mogador
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Tangier
Tetuan

NAPLES.

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Cocagna
Grotta del Cane
Torre del Greco
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Acton, Joseph
Caraccioli, Francesco
Caroline Maria
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NETHERLANDS.

- Flanders
- Fontenoy
- Friesland
- *Biography.*
  - Horn, Philip II. Count of
- Margaret, called Madame de Parma
- Margaret of Austria
- Mersch, Van der
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NEWFOUNDLAND.

- Bull's Bay
- Green Bank
- Newfoundland, *s*

NORWAY.

- TOPOGRAPHY.
  - Bergen
  - Christiana
  - Christiansand
  - Maelstrom
  - Norway, *s*
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- HISTORY.
  - Harold I.
- LITERATURE.
  - Pontoppidan, Eric
- *Miscellaneous.*
  - Commerce
  - Constitution
  - Logthing
  - Public Stocks
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- Adventure Island
- Amsterdam
- Apostle's Islands
- Bauman Islands
- Beering's Island
- Byron's Island
- Caledonia, New
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- Friendly Islands
- Georgia, Gulf of
- Hebrides, New
- Jeso
- Ladrones
- Lucon
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PALESTINE.

- TOPOGRAPHY.
  - Ascalon
  - Bethesda
  - Bethlehem
  - Capernaum
  - Carmel
  - Dead Sea
  - Decapolis
  - Galilee
  - Gaza
  - Genesareth
  - Gilead, the Mountains of
  - Jericho
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  - Nain
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  - Olives, Mount of
  - Palmyra
  - Siloa
  - Tabor
  - Tophet
- HISTORY.
  - Crusades
  - Pontius Pilate

PERSIA.

- TOPOGRAPHY.
  - Afghanistan
  - Azerbijan
  - Bactriana
  - Bushire
  - Ecbatana
  - Estachar
  - Hyrcania
  - Ispahan
  - Kom
  - Media
  - Median Wall
  - Meschid
  - Parthia
  - Pasa
  - Persepolis
  - Persian Gulf
  - Schiras
  - Tauris
  - Teheran
  - Yezed
- HISTORY.
  - Afghans
  - Artaxerxes
  - Assassins, *s*
  - Cambyses
  - Chosroes I.
  - Chosroes II.
  - Cyrus
  - Darius
  - Euergetæ
  - Jemshid
  - Malcolm, Sir John
  - Nadir Schah
  - Xerxes I.
  - Zend-Avesta
  - Zeres, Francis
  - Zopyrus
  - Zoroaster
- *Miscellaneous.*
  - Arimanes
  - Commerce
  - Peri
  - Satraps
- LITERATURE.
  - Desatir
  - Ferdusi
  - Hafez
  - Jami
  - Sadi of Shiraz
  - Zend-Avesta

PERU.

- TOPOGRAPHY.
  - Apurimac
  - Arequipa
  - Arica
  - Atahualpa
  - Callao
  - Caxamarca
  - Chimu
  - Chulucanas
  - Cusco
  - Guamanga
  - Guanca Velica
  - Lima
  - Nevados de Illimani.
- HISTORY.
  - Almagro, Diego
  - Balboa, Vasco Nunez de
  - Belgrano, Manuel
  - Manco Capac
  - Pizarro, Francisca.
- *Miscellaneous.*
  - Ayachuco, Battle of
  - Commerce
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PHOENICIA.

- TOPOGRAPHY,
  - Tyre
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POLAND.

- TOPOGRAPHY.
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  - Czenstochow
  - Lithuania
  - Ostrolenka
  - Praga
  - Vistula
  - Warsaw
  - Wieliczka.
  - Zamosc.
- HISTORY.
- *Biography.*
  - Augustus II.
  - Augustus III.
  - Casimir III.
  - Koscinsko, Thaddeus
  - Krasicki, Ignatius
  - Mazeppa, John
  - Oginski
  - Palawski, Count Joseph
  - Poniatowsky
  - Sobieski, John
  - Stanislaus I.
  - Stephen Bathori
  - Zaluski
  - Zamoiski, Andrzey
- *Miscellaneous.*
  - Commerce
  - Constitution
  - Dissidents
  - Plica Polonica
  - Polish Legions
  - Potocki
  - Magnates
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  - Starosts.
- LITERATURE.
  - Naruszewicz, Adam Stanislaus
  - Zaluski
  - Zamoiski, John.

PORTUGAL.

- TOPOGRAPHY.
  - Abrantes
  - Almeida
  - Batalha
  - Beira
  - Belem
  - Braganza
  - Busaco
  - Coimbra
  - Douro, *s*
  - Elvas, *s*
  - Entre Duero-e-Minho
  - Estremadura
  - Lamego
  - Lisbon
  - Mafra
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Torres Vedras, Lines of
Vincent, Cape St
HISTORY.
Barros, Joan de
Emanuel the Great
Ines de Castro
Pombal, Marquis of
Sebastian, Don
Viriathus
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LITERATURE.
Camoens, Louis de
Correa De Serra Joseph Francis
Ferreira, Antonio
Lobeira, Vasco
Manoel don Francesco
Montemayor, Jorge de
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Berlin
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Cologne
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Custrin
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Dennewitz
Dortmund
Dusseldorf
Elberfeld
Elbing
Erfurt
Eylau
Fehrbellin
Glatz
Glogau
Gorlitz
Greifswalde
Gross-beeren
Grunberg
Halberstadt
Halle
Hundsbruck
Iserlohn
Juliers
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Konigsberg
Liegnitz
Lutzen
Magdeburg
Marienburg
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Memel
Merseburg
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Munster
Naumberg
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Œls
Paderborn
Pillau
Pomerania
Posen
Potsdam
Quedlinburg
Rhine, Lower
Saar Louis
Sans Souci
Silesia
Solingen
Spandau
Stettin
Stralsund
Suhl
Swinemunde
Thorn
Tilsit
Torgau
Treves
Troppau
Usedom
Wahlstadt
Warendorf
Warmbrunn
West Prussia
Westerwold
Xanten
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HISTORY.
Biography.
Bischofswerder, John Rudolph Von
Blucher, Lebrecht Von
Brunswick, M. J. Leopold, Prince of
Bulow, Frederick William
Clausewitz, Charles
Cranmer, Count of
Derflinger, Baron of
Dohm, Christian William Von
Elizabeth Christina
Fouque, Henry Augustus
Frederic William I.
Frederic II.
Hardenberg, Charles Augustus
Hatzfeld, Francis Louis, Prince of
Haugwitz, Count of
Henry Prince of Prussia
Hertzberg, Count of
Hohenlohe, J. Prince of
Kalckreuth, Count of
Katzbach
Keith, James
Kleist Von Nollendorf
Leopold I.
Louisa of Prussia
Lucchesini, Prince of
Mœllendorf, Count Von
Menzel, Frederic William
Nettelbeck, J. C.
Scharnhorst, G. D. Von
Schill, Ferdinand Von
Schwerin, Count
Tauenzien, Von W. Count of
Trenck, Baron
Winterfeldt, Hans Charles Von
Wollner, John Christian Von
York, Count Von Wartenburg
Ziethen, Hans Joachim Von
Miscellaneous.
Jena, Battle of
Lutzows Free Corps
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Wartenburg, Battle of
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STATISTICS.
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Public Stocks
LITERATURE.
[illegible], [illegible] Jeremiah
Bretschneider, Henry Godfrey Von
Riedesel, Baroness

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OFFICES.
Ædiles
Aruspices
Censors
Consul
Dictator
Lictors
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Pretor
Pretorians
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FESTIVALS, CEREMONIES, &c.
Comitia
Fasti
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MISCELLANEOUS HISTORY
Agrarian Laws
Agriculture
Apulia
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Champe de Mars
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Patricians
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Tarpeia
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Thrasymene
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BIOGRAPHY IN CONNECTION WITH ROMAN HISTORY.
Adrian
Agricola Cneius Julius
Agrippa Marcus
Agrippina
Ancus Martius
Androcles
Antoninus Aurelius Verus
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Antoninus Pius
Arria
Aruns
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Atticus Titus Pomponius
Augustulus
Augustus
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Belisarius
Britannicus, Cæsar
Brutus, Lucius Junius
Brutus, Marcus Junius
Cæsar, Caius Julius
Cæsar, Octavius
Caligula, Caius Cæsar Augustus Germanicus
Camillus, Marcus Furius
Caracalla
Cassius, Longinus Caius
Catiline, Lucius Sergius
Cato the Censor
Cato, Marcus Porcius
Cincinnatus, Lucius Quinctius
Cinna, Lucius Cornelius
Cinna, Cornelius
Claudianus, Claudius
Claudius, Crassinus
Claudius, Tiberius Drusus Cæsar
Commodus, Antoninus
Constantine
Coriolanus
Cornelia
Crassus
Curcius, Marcus
Curius, Dentatus
Decius
Diocletian, C. Valerius
Domitian
Drusus
Fabii
Fabius, Maximus Quintus
Faustina
Galba, Sergius
Germanicus, Cæsar
Gracchus, Tiberius Sempronius, and Caius
Heliogabalus
Honorius
Horatius, Cocles
Hortensius, Quintus
Juba
Juba II.
Jugurtha
Julia
Julian
Lentulus
Lepidus, M. Æmilius
Livia, Drusilla
Lucretia
Lucullus, Lucius Licinius
Manlius, Marcus Capitolinus
Manlius, Titus Torquatus
Marcellus, M. Claudius
Marius, Caius
Maximinus, Caius Julius Verus
Messalina
Mucius Scævola
Nero
Nerva
Numa Pompilius
Octavia
Otho Marcus S.
Piso
Pompey the Great
Porcia
Porsenna
Regulus, Marcus Attilius
Romulus
Scipio Africanus the Elder
Sejanus
Sertorius, Quintus
Servius, Tullus
Spartacus
Syphax
Tarquinius, Lucius
Theodosius
Tiberius, Claudius Nero
Titus, Vespasianus
Trajan
Tullus, Hostilius
Valentinian
Valerian, Publius Licinius
Valerius
Verres, Caius Licinius
Vespasianus, Titus Flavius
Victor, Sextus Aurelius.

ROMAN LITERATURE.

Affranius, Lucius
Alexander Severus
Ammianus, Marcellinus
Appian of Alexandria
Apuleius, A. Lucius
Ausonius, Decius Magnus
Avienus, Rufus Festus
Bœthius, Anicius Manlius Torquatus Severinus
Calpurnius, Titus Julius
Cassiodorus, Marcus Aurelius
Catullus, Caius alerius
Cicero, Marcus Tullius
Cornelius Nepos
Curtius, Rufus Quintus
Diodorus Siculus
Dion Cassius
Dionysius of Halicarnassus
Donatus, Ælius
Ennius Quintus
Eutropius, Flavius
Fabricius, Caius
Flaccus, Caius Valerius
Florus, Lucius Annæus
Frontinus, Sextus Julius
Fronto, Marcus Cornelius
Gellius, Aulus
Horatius, Flaccus Quintus
Justin
Justinian
Juvenal
Juvencus, Caius V. A.
Lactantius
Livius, Andronicus
Livius, Titus
Lucanus, Marcus Annæus
Lucilius, Caius Ennius
Lucretius, Titus Carus
Macrobius
Mæcenas, C. Clinius
Manilius, Felix Marcus
Martial, Marcus Valerius
Minucius, Felix Marcus
Nævius, Cneius
Orbilius, Pupillus
Ovidius, Publius
Paterculus, Caius Velleius
Persius
Petronius, Titus
Phædrus
Philo of Byzantium
Plautus, Marcus Accius
Pliny the Younger
Propertius
Quintilianus, Marcus Fabius
Sallustius, Caius Crispus
Scaurus, Marcus Æmilius
Seneca Marcus Annæus
Severus, Lucius Septimius
Silius, Caius
Statius, Publius Papinus
Suetonius
Sulla, Lucius Cornelius
Tacitus, Cornelius
Tatius
Terence
Tibullus, A.
Valerius Maximus
Varro, Marcus Terentius
Virgil
Vitellius Aulus
Xeno

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Amphitheatre
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Aquitania
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Lateran
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Irkutsk
Ismail
Kaluga
Kamschatka
Kasan
Kertsch
Kesseldorf
Kiachta
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Kola
Ladoga
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Narva
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Niemen
Novgorod
Oczacow
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Petersburg, St
Podolia
Pruth
Pultawa
Revel
Riga
Russia, Black
Russia, Great
Russia, Little
Russia, Red
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Samogitia
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Siberia
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Sueaborg
Taurida
Teflis
Tobolsk
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Tornea
Tula
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Volhynia
Wolga
Yakoutsk
Zarskoje Selo.
HISTORY.
Miscellaneous.
Austerlitz
Bashkirs
Benningsen
Cossacks
Czar
Friedland, Battle of
Hetman
Moskaw, Battle of the
Northern War
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Smolensk, Battle of
Strelitz
Ukase.
BIOGRAPHY.
Alexander I.
Alexander Newskoi
Alexis Michaelovitsch
Alexis Petrovitsch
Anna Ivanowna
Anthing Fredric
Beering, Vitus
Biren, Ernst
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Godfrey, Thomas Junr.
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Hutchins, Thomas
Linn, John Blair
Mason, John Mitchell
Mather, Increase
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Mayhew, Jonathan
Minot, George Richard
Murray, Lindley
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  - Arbiter
  - Attorney
  - Assessor
  - Auctioneer
  - Auditor
  - Bailiff
  - Barrister
  - Coroner
  - Counsel
  - Counsellor
  - Executor
  - Fiscal
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  - Justice of Peace
  - Keeper of the Great Seal
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  - Posse Comitatus
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Coke, Sir Edward
Craig, Sir Thomas
Cujas, Jacques
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Hanbold, Christian Gottlieb
Holt, Sir John
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Defender of the Faith
Degree
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Doctor
Doge
Don
Duke
Earl
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Emperor
Equerry
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King
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Madame
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Majesty
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Marshal
Marshal of Empire
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- Bodin, Jean
- Cabot, George
- Colquhoun, Patrick
- Dumont, Stephen
- Hamilton, Robert
- Heinitz, Anthony Frederic
- Huskisson, William
- Lauderdale, James, Earl of, *s*
- Macchiavelli, Nicolo
- Malthus, Thomas Robert, *s*
- Morton, Sir Frederic
- Paine, Thomas
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Folard, Chevalier de
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Guischard, Charles Gottlieb
Gunn, Henry
Lloyd, Henry
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- Locker
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- Raft
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- Americus, Vespucius
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- Baffin, William
- Bougainville, Louis Antoine de
- Byron, John
- Cabot, Sebastian
- Cavendish, Thomas
- Circumnavigators
- Columbus, Christopher
- Cook, James
- Dampier, William
- Davis, John
- Diaz
- Diemen, Anthony Von
- Drake, Sir Francis
- Frobisher, Sir Martin
- Gama, Vasco de
- Gilbert, Sir Humphrey
- Gioja, Flavio
- Hawkins, Sir John
- Henry the Navigator
- Hudson, Henry
- Kerguelen, Tremaree
- La Perouse
- Magalhaens, Fernando de
- Mulgrave, Lord
- Narvaes, Pamphila de
- Nearchus
- Pigafetta, Antonio
- Ponce de Leon, Juan
- Rogers Woods
- Vancouver, George

FINE ARTS.

PAINTING.

Air
Battle-piece
Boisseree
Bright
Camaieu, or Cameo
Carmine
Carnation
Chiaro Scuro
Colouring
Cosmorama
Crayons
Design, School of, *s*
Drawing
Eye (Eyes of a portrait)
Encaustic Painting
Flowers, Painting of
Foreshortening
France, (Painting)
Gamboge
German Painting
Glair of Eggs
Glass, Painting on
Giustiniani Collection
Grotesques
Keeping
Limning
Lithochromics
Madonna
Miniature Painting
Mono-chrome
Myriorama
Neorama
Netherlandish School of Painters
Nimbus
Oil Painting
Outline
Pallet
Panorama
Pastel
Pencil
Pencil of Rays
Perspective
Pendant
Pigments
Profile
Purple
Scagliola
Still Life
Tone
Turmeric
Ultramarine
Umber
Vermillion
BIOGRAPHY.
Albani, Francesco
Aberli, John Lewis
Abildgard
Aikman, William
Alberti
Alexander, John
Allan, David
Amberger, Christopher
Angelo, Buonarotti Michael
Appelles
Appiani, Andrew
Appollidorus of Athens
Arpino, Josephino d'
Asseylyn John
Astley, John
Attiret, John Denis
Baan, John Van
Baccio, Della Porta Francisco Bartolomeo
Backerel, William
Backhuysen, Ludolf
Baden, Francis
Balen, Hendrick Van and Jacob Van
Balestra Antonio
Bamboccio. See Laar, Peter Van
Barbarelli, Giorgio. See Giorgione
Barbieri, Giovanni Francisco da Cento. See Guercino
Baroccio, or Barozzi, Frederic
Barezzi, Stefano
Barry, James T.
Bassan
Batoni, Pompeo Girolamo
Beek, David
Bellini, James and his two sons Gentile and Giovanni
Berghem, Nicholas
Berritini Pietro. See Cortona
Bibbiena, Fernando
Bird, Edward
Bloemart Abraham
Bone, Henry, *s*
Bordone, Paris
Both, John and Andrew
Boucher, Francis
Bourdon, Sebastian
Brakenburg, Regner
Branwer, Adrian
Breughel
Bronkhorst, Peter Van
Bronzino, Angelo
Brun, Charles le
Bruyn, Corneille le
Caffe, Daniel
Cagliari, Paul, called Veronese
Calabrese
Calcar, John Van
Caldara, Polidoro
Calvart, Dionysius
Canaletto
Cano Alonzo
Capas, Louis François, *s*
Caravaggio, Michael Angelo Amerghi
Carpi, Girolamo da
Carpi, Ugo da
Carracci, Ludovico, Agostino, and Annibale
Casanova, Francis
Castagno, Andrea del
Cerquozzi, Michael Angelo
Champagne, Philip
Chodowiecki Daniel Nicholas
Cimabue, Giovanni
Cignani, Carlo
Cipriani Giambattista
Claude Lorraine
Copley, John Singleton
Cornelis, Cornelius
Corregio, Antonio Allegri
Cortona, Pietro da
Coypels, the
Coxie, Michael
Crayer, Gaspar
David, Jacques Louis
Delft
Denner, Balthaser
Dietsch, Barbara Regina
Dietrich, John William Ernest
Dolce Carlo
Domenichino
Dorigny
Dosso Dossi
Dow, Gerard
Doyen, Gabriel François
Drouais, John Germain
Dujardin, Charles
Durer, Albert
Edelinck, Gerard
Edmonstone, R. *s*
Edridge, Henry
Elford, Sir William, *s*
Everdingen
Eyck, Hubert and John Van
Fiesole
Floris, Francis
Fresnoy, Charles Alphonse du
Fuger, Frederic Henry
Fuseli, Henry
Fyt, John
Garofalo, Benvenuto
Gell, Sir William
Ghirlandaio, Domenico
Giordano Luca
Giorgione, da Castelfranco
Giotto
Girodet, Trioson Nicholas
Giulio, Romano
Goetz, Baron de
Guercino
Guido, Reni
Hackert, Philip
Hamilton, Gavin
Heemskerk, Martin Van
Helst, Bartholomew Van der
Hemmling, Hans
Highmore, Joseph
Hogarth, William
Holbein, Hans
Hondekoeter
Honthorst, Gerard
Howe, James, *s*
Huysum, John Van
Jackson, John, *s*
Kauffmann, Angelica
Kneller, Sir Godfrey
Kranach, Lucas
Kuyp, Albert
Laar, Peter Van
Lairesse
Lawrence, Sir Thomas
Lebrun, Charles
Lefevre, Robert
Lely, Sir Peter
Lemoine, Francis
Lesueur Eustache
Liverseege, Henry, *s*
Lippi

Lonsdale, James, *s*
Loutherbourg, Philip James
Luke of Leyden
Mabuse, John de
Mantegna, Andrew
Maratti, Carlo
Masaccio
Matsys, Quintin
Mazzola, Francesco
Mecheln, Israel of
Mengs, Anthony Raphael
Merian, Matthew
Metzu Gabriel
Meulen, Anthony Francis Van der
Mieris, Francis
Mignard, Pierre
Mirevelt, Michael Janson
Mola, Peter Francis
Morales, Louis de
Morland, George
Muller, Frederic
Murillo, Bartolomeo Esteban
Nasmyth, Alexander, *s*
Neef, Peter
Neer, Arnold Van der
Netscher, Gaspar
Newton, Gilbert Stuart, *s*
Northcote, James
Ommeganck
Opie, John
Ostade, Adrian Van
Ottley, William Young, *s*
Palma, Giacomo
Palomino, De Valasco
Parrhasius
Peale, Charles Willson
Perugino Pietro Vanucci
Piombo, Sebastiano Del
Poelenburg, Cornelius
Polygnotus of Thasus
Ponte Giacomo de. See Bassan
Pordenone
Porter, Sir Robert Ker
Potter, Paul
Poussin Nicholas
Poussin Gaspar
Preti Mattia. See Calabrese
Primaticcio, Francesco
Protogenes
Prudhon, Pierre Paul
Raeburn, Sir Henry
Ramberg, John Henry
Raphael
Rembrandt, Van Rhyn Paul
Reynolds, Sir Joshua
Ribera Joseph. See Spagnoletto
Roger
Rubens, Peter Paul
Rugendas, George Philip
Runciman, Alexander
Ruysch, Rachel
Ruysdael, James
Sandrart, Joachim Von
Sarto, Andrea del
Sassoferato
Schiavone, Andrea
Schoen, Martin
Schoreel, John
Seidelmann, James
Silhouette
Snyders, Francis
Spagnoletto
Steen, Jan
Steinkopf, John Frederic
Steawick, Henry
Stewart, Gilbert
Stothard, Thomas, *s*
Tempesta
Teniers, David
Tintoretto
Tischbein
Tisi Benvenuto. See Garofalo
Titian
Tosini Santi. See Fiesole
Vandyck, Anthony
Vanloo
Vannuccul. See Andrea del' Sarto
Vasari, Giorgio
Velasquez
Velde, William Van der, called the Old
Velde, William Van der, called the Younger
Velde, Adrian Van der
Vermeyen, John Van
Veronese Paul. See Cagliari
Vernet
Vinci, Leonardo da
Vouet, Simon
Vroon, Henry Cornelius
Waterloo, Anthony
Watteau, Antoine
Weeinx, John Baptist
Werf, Adrian Van der
West, Benjamin
Wilson, Richard
Wohlgemuth, Michael
Wouvermans, Philip
Wright, Joseph
Zaftleeven, Hermann
Zampieri Domenico. See Domenichino.
Zeuxis

SCULPTURE.

Æginetan Style and Monuments of Art
Alabaster
Antinous
Apollo Belvidere
Arundelian Marbles
Bass Relief
Bust
Cartouch
Chasing
Colossus
Dædalus
Diaglyphon
Elgin Marbles
Gladiatorial Statues
Glyptotheca
Hermes
Laocoon
Marble
Marforio
Myron
Niobe
Statue
Torso
Biography.
- Adam
- Algardi, Alexander
- Angelo, Buonarotti Michael
- Archelaus
- Bacon, John
- Banks, Thomas
- Bernini, Giovanni Lorenzo
- Bonzaniga, Guiseppe
- Bouchardon, Edmund
- Cano, Alonzo
- Canova, Antonio
- Cellini, Benvenuto
- Ceracchi, Joseph
- Chaudet, Antoine Deins
- Coysevox, Antoine
- Doll, Frederic William
- Donner, George Raphael
- Falconet, Stephen 'Maurice
- Finiguerra, Tommaso
- Flaxman, John
- Girardon, Francis
- Ghiberti, Lorenzo
- Kellar, John Belthasar
- Lysippus
- Moitte, Jean Guillaume
- Nollekins, Joseph
- Nahl, Johann August
- Phidias
- Pigalle, Jean Baptiste
- Pisanus, Nicolaus
- Polycletus of Sicyon
- Praxiteles
- Puget, Pierre
- Roubilliac, Louis Francis
- Rysbach, John Michael
- Sergell, John Tobias
- Seroux, L'Agincourt Jean Baptiste
- Torrigiano, Pietro
- Trippel, Alexander
- Zauner, Francis de

HERALDRY.

Argent
Armiger
Armour, Coat of
Baron
Baronets
Blazoning
Cartouch
Coat of Arms
Commandery
Coronet
Courts of Honour
Crest
Crown
Device
Escutcheon
Fleece, Order of the Golden
Fleeces, the Order of the Three Golden
Flower de Lis
Garter, Order of the
George, St
Ghost, Order of the Holy
Hand
Herald
Hubert, Order of St
King at Arms
Knights of the Bath
Mound
Orders, Military
Passant
Peer
Poursuivant
Quarter
Quartering
Rampant
Regardant
Supporters
Thistle, Knights of the
Wreath
For Writers on *Heraldry*, see *Biography* of different countries.

ARCHITECTURE.

Aqueduct
Arcade
Atlantides
Attic Base
Buttresses
Cable
Caisson
Caryatides
Cathedral
Cartouch
Columbarium
Column
Corridor
Conduit
Crypt
Cupola

Cyclopean Work
Echea
Façade
Flutes
Foundation
Frieze
Gallery
Groin
Key
Kiosk
Kiosk Stone
Labyrinth
Listel
Lanthern
Marble
Mausoleum
Metope
Modillion
Module
Nave
Niche
Obelisk
Piazza
Phelloplastics
Propylæa
Portico
Pyramids
Rotunda
Soffita
Stucco
Temple
Triumphal Arch

Biography.
Adam, Robert
Alberti, Leon Baptista
Andronicus of Cyrresthes
Androuet der Cerceau, James
Angelo, Buonarotti Michael
Bernini, Giovanni Lorenzo
Brunelleschi, Philip
Cano, Alonzo
Edwards, William, s
Erwin of Steinbach
Fontana Domenico
Goodwin, Francis, s
Jones, Inigo
Lapo, Arnolph
Mylne, Robert
Palladio, Andrea
Piranesi
Sangallo, Antonio
Soane, John
Stuart, James
Trophonius
Vanbrugh, Sir John
Vitruvius, Pollio Marcus
Wren, Sir Christopher

ENGRAVING.

[Etching
Engraving in Lines
Engraving in Outline
Steel Engraving
Stippling
Aqua Tinto
Engraving in Mezzotinto
Etching with soft ground
Engraving in Wood
Coloured Engravings
Engravers, Modern
Engraving on Precious Stones.]
Aquatinto
Burin
Cast Engravings
Counter Proof
Daguerrotype, s
Engraving, s
Etching
Impression
Lithography
Siderography
Wood Engraving
Biography.
Anichini, Luigi
Bartolozzi Francesco
Bause, John Frederic
Bella, Stefano de la
Bervic, Charles Clement
Bewick, Thomas, s
Boydell, John
Callot, Jacques
Carpi, Ugo Da
Cellini, Benvenuto
Chodowiecki, Daniel Nicholas
Cipriani, Giambattista
Cochin, Charles Nicholas
Coney, John, s
Cooke, George, s
Coxie, Michael
Dorigny
Durer, Albert
Earlom, Richard
Edelinck, Gerard
Gmelin, William Frederic
Heath, James, s
Lysons, Rev. Daniel, s
Maratti, Carlo
Mecheln, Israel of
Mire, Noel de
Moreau, Jean Michel
Morghen, Raphael
Muller, John Gotthard Von
Non, Jean Claude Richard de Saint
Ramberg, John Henry
Rembrant, van Rhyn Paul
Sandrart, Joachim Von
Sennefelder, Aloys
Volpato, Giovanni
Waterloo, Anthony
Wille, John George
Woollett, William
Zanetti, Count

POETRY.

Poetics.
Acrostic
Adonic
Alexandrine
Alliteration
Anagrams
Asclepedean Verse
Assonance
Assonant Rhymes
Ballad
Bard
Bouts Rimes
Cæsura
Cento
Charade
Choriamb
Didactic Poetry
Distich
Eclogue
Elegy
Endecasyllables
Epic
Epigram
Episode
Epode
Fescinine Verses
Foot
Heroical Epistle
Hexameter
Hiatus
Hymn
Iambus
Improvisatori
Ionic Foot
Lay
Leonine Verse
Lyrics
Macaroni Poems
Madrigal
Minstrel
Monogram
Ode
Palindromon
Parody
Pastoral
Pentameter
Provençal Poets
Quatrain
Redondillas
Rhapsody
Rhyme
Rhythm
Satire
Scanning
Seguidilla
Sestina
Sonnet
Spondee
Stanza
Strophe
Threnody
Travesty
Triolet
Troubadours
Verse
See *Egyptian Mythology*, and *Rhetoric*.
See *Poets*, under the *Biography* of the several countries.
Drama.
Actor
Atellanæ Fabulæ
Burletta
Buskin
Chorus
Comedy
Declamation
Dialogue
Dramaturgy
Epilogue
Farce
Histriones
Harlequin
Interlude
Masks
Masque
Melo-drama
Mimes
Monodrama
Monologue
Morality
Mysteries
Opera
Oratorio
Pageant
Pantaloon
Pantomime
Prologue
Proscenium
Punchinello
Scaramouch
Scenery
Sock
Soliloquy
Soubrette
Termagant
Theatre
Thespis
Tragedy
Trilogy
See *Poetry*
See *Dramatic Writers* and *Actors* under the *Biography* of different countries.

MUSIC.

Music, s
Musical Compositions.
Accompaniment
Air
Bravura
Cantata
Canzonet
Cavatina
Chorus
Concert
Concerto
Fanfare
Fantasia
Finale
Flourish
Fugue
Glee
Instrumental Music
March
Melody
Music, s
Overture

Orchestra
Overture
Pastorale
Piano
Plain Song
Polonaise
Quartetto
Quintetto
Ritornello
Rondo
Russian Hunting Music
Scherzo
Serenade
Singing
Solo
Symphony
Te Deum Laudamus
Theme
Trill
Trio
Vocal Music

MUSICAL INSTRUMENTS.

Æolian Harp
Apollonicon
Bagpipe
Basset Horn
Bassoon
Bass Viol
Bow
Bow Instruments
Calamus
Chimes
Clarichord
Clarinet
Cornet
Cymbals
Drum
Fife
Flageolet
Flute
Gong
Guitar
Harp
Harpsichord
Hautboy
Horn, or Bugle Horn
Hydraulicon
Instrument
Jew's Harp
Lute
Lyre
Organ
Pedals
Piano Forte
Pitch-pipe
Psaltery
Sacbut
Spinet
Syrinx
Tambourine
Terpodion
Theorbo
Tibia
Trombone
Trumpet
Tuba
Tympanum
Viol
Violin
Violoncello
Violino

MUSICAL TERMS.

Adagio
Ad libitum
A la mi re
Alla Breve
Allegro
Alt
Alto, or Alto Tenore
Amati
Andante
Appogiatura
Appogiato
A Tempo
Attacca
Bariton
Bass
Breve
C.
Cadence
Caldara
Canon
Capriccio
Catgut
Choral
Chord
Chromatic
Clavicimbatum
Cliffs, or Cleves
Come Sopra
Come Sta
Concord
Conservatory
Consonance
Counterpoint
Crescendo
Da Capo
Dal Segno
Decrescendo
Diapason
Diatonic
Diatonum Intensum
Discord
Dissonance
Enharmonic
False
Falsetto
Fifth
Finger Board
Fingering
Flat
Fourteenth
Fourth
Frets
Fundamental Note
Gamut
Grave
Harmonica
Harmony
Harmony, Figured
Heptachord
Hexachord
Interval
Intonation
Key Note
Keys
La
Legato
Leger Lines
L'Intesso Tempo
Major
Mancando
Mandola
Men
Messe Concertate
Messe di Capella
Messa di Voce
Mesto
Mezzo
Mi
Minim
Mode
Modulation
Molle
Molto
Monochord
Motet
Ninth
Notes
Obligato
Octave
Piano
Pizzicato
Piu
Point
Postamento di Voce
Recitative
Recognizance
Scale
Segno
Sestetto
Sharp
Sistrum
Solfaing
Soprano
Sordino
Staccato
Stop
Stretto
Tablature
Tempo
Tenor
Tetrachord
Thorough Bass
Time
Timoroso
Tirade
Tone
Tonic
Triad Harmonic
Tutti
Unison
Ut Re Mi
Va
Variation
Voice

BIOGRAPHY.

Aldrich, Henry
Allegri, Gregorio
Anfossi, Pasquale
Aretino, Guido
Ariosti, Attilio
Arne, Thomas Augustin
Arnold, Dr Samuel
Bach, John Sebastian
Balalaika
Beethoven, Louis Von
Benda, George
Beriot, Madame Malibran de, *s*
Boccherini, Luigi
Boyce, William
Burney, Charles
Calvisius, Seth
Carissimi, Giacomo
Cimarosa, Domenico
Clementi, Musio
Corelli, Arcangelo
Davies, Cecilia, *s*
Della, Maria Dominique
Denner, John Christian
Ditters von Dittersdorf, Charles
Durante, Francesco
Farinelli
Fux, John Joseph
Gallupi, Baldessaro
Gluck, the Chevalier
Gossec, Francis Joseph
Graun, Charles Henry
Gretry, Andre Ernest Modeste
Guglielmi, Peter
Handel, George Frederick
Hasse, John Adolphus
Haydn, Joseph
Himmel, Frederic Henry
Homilius, Godfrey Augustus
Incledon, Benjamin Charles
Jackson, William
Jomelli Nicolo
Josquin de Prez Adrian
Keiser
Lasso, Orlando di
Leo, Leonardo
Lesueur, Jean Baptiste
Linus
Lolli, Antonio
Lully, Jean Baptiste
Majorano, Gaetano
Manelli, Pietro
Mara, Gertrude Elisabeth
Marcello, Benedetto
Marchesi, Luigi
Marpurg, Frederic William
Martini, John Baptist
Mayer, Simon
Mehul, Stephen Henry
Mingotti, Catharine
Monsigny, Pierre Alexandre
Mozart
Naldi, Sebastiano
Nardini, Pietro
Naumann, John Gottlieb
Neukomm, Sigismund
Nicolo
Paesiello, Giovanni
Palestrina, Giovanni Pietro Aloisio
Philidor, Andrew
Piccini, Nicolo
Porporo, Nicolo
Purcell, Henry
Quantz, John Joachim
Rameau, Jean Philippe
Reichardt, John Frederic
Sacchini
Salieri, Anthony
Sarti, Joseph
Scarlatti, Allessandro
Schicht, John Gottfried
Staner, Jacob
Stein, John Andrew
Tartini, Guiseppe
Telemann, Gio. Philip

- Viotti, Giovanni Battista
- Vogler, George Joseph
- Weber, Charles Maria Von
- Weber, Godfrey
- Wieland, Christ. Martin
- Winter, Peter Von
- Wolfe, Joseph
- Zarlino, Guiseppe
- Zingarelli, Nicolo
- Zumsteeg, John Redolphus

MISCELLANEOUS.

- Antique
- Arabesque
- Byzantine School of Art
- Cameo, or Camaieu
- Canon
- Caricature
- Cartoon
- Cast
- Costume
- Cramp
- Death, Dance of
- Dilettanti
- Drawing
- Emblem
- Embossing
- Ensemble
- Etruria
- Excavations
- Faux Jour
- Fresco Painting
- Gem Sculpture
- German School of Art
- Group
- Iconography
- Ideal
- Manner
- Model
- Mosaics
- Murrine Vases
- Museum
- National Gallery
- Nudity
- Pictures, Living
- Pitturesque
- Plastic
- Portland Vase
- Relievo
- Restoration
- Biography.
  - Aldobrandini
  - Angerstein, John Julius
  - Artemisia
  - Berry, William
  - Cellini Benvenuto
  - Crozat, Joseph Antony
  - Denon, Baron de
  - Egremont, Earl of
  - Fresnoy, Charles Alphonse du
  - Gell, Sir William
  - Howard, Thomas, Earl of Arundel
  - Kent, William
  - Knight, Richard Payne
  - Lanzi, Luigi
  - Medici
  - Piranesi
  - Tischbein
  - Townley, Charles
  - Vasari, Giorgio
  - Visconti, John Baptist Anthony
  - Visconti, Ennius Quirinus
  - Watelet, Claude Henry
  - Wood, Robert

GRAMMAR, METAPHYSICS, AND MATHEMATICS.

I.

GRAMMAR.

- Language.
  - [Written Language
  - Spoken Language
  - Origin and Formation of Language
  - Primitive Tongue]
  - Voice
  - Vowel
  - Consonant
  - Aspirate
  - Accent
  - Syllable
  - Dialect
  - Semitic Languages
  - Romanic Languages
  - Sanscrit
  - Guttural
  - Euphony
  - Cacophony
  - Style
  - Synonymes
  - Prose
  - Tautology
  - Pathos
  - Bombast
  - Burlesque
  - Archaism
  - Anacoluthon
  - Onomatopæia
- Hieroglyphics.
  - Egyptian Hieroglyphics
  - Hieroglyphic
  - Hieratic
  - Demotic
  - Pure Hieroglyphics
  - Numeration by Hieroglyphics
  - Ideographic
  - Denderah
  - Rosetta Stone
  - Horapolla
  - See *Writing*.
- Writing.
  - Alphabet
  - Demotic Alphabet
  - Runic Alphabet and Words
  - Autographs
  - Autography
  - Isography
  - Phonetic
  - Pasigraphy
  - Quipos
  - Apograph
  - Art of Deciphering
  - Pen
  - Manuscripts
  - Manuscripts, Illuminated
  - Materials
  - Monograph
  - Vellum
  - Dyptycha
  - Punctuation.
  - See *Hieroglyphics*.
- Typography.
  - Asterisk
  - Correction of the Press
  - Crapelet
  - Form, Printers'
  - Fount
  - Signature
  - Minion
  - Nonpareil
  - Primer
  - Printing
  - Quadrat
  - Revise
  - Signature
  - Stereotype
  - Typography
- Typographers.
  - Ballantyne, James
  - Barbon
  - Baskerville, John
  - Bodini, Giambatista
  - Bowyer, William
  - Breitkopf, John Gotlob Emanuel
  - Caxton, William
  - Coster, Laurens
  - Didot
  - Elzevir
  - Faust, John
  - Froben, John
  - Giunti
  - Guttenberg, John
  - Ibarra, Joachim
  - Manutius, Aldus
  - Stephens
- Grammar.
  - Article
  - Noun
  - Pronoun
  - Object
  - Verb
  - Indicative
  - Imperative
  - Infinitive
  - Participle
  - Particles
  - Preposition
  - Dual
  - Amphibology
  - Orthography
  - Etymology
  - Syntax
  - Prosody
  - Punctuation
  - Period
  - Ellipsis
  - Solecism
  - Anomaly
  - Diminutive
  - See *Language*, &c.
- Biography.
  - Adam, Alexander
  - Adam, Nicholas
  - Apollodorus
  - Philo of Biblos
- Rhetoric.
  - Topics
  - Metaphor
  - Trope

- **Metonomy.**
  - Apostrophe
  - Antithesis
  - Antiphrasis
  - Synecdoche
  - Pleonasm
  - Amplification
  - Climax
  - Personification
  - Paranomasia
  - Antanaclasis
  - Asyndeton
  - Assonance
  - Anaphora
  - Epiphora
  - Concetti
  - Allegory
  - Rhetoricians and Grammarians
  - See *Grammar* and *Poetry*.
- **Logic.**
  - Thesis
  - Synthesis
  - Induction
  - Major
  - Syllogism
  - Category
  - Argumentum ad hominem
  - Epichirema
  - Paralogism
  - Dilemma
  - Circle
  - Petitio Principii
  - Sophism
  - Sorites
  - Concrete
  - Dialectics
  - Quantity and Quality
- **Philology.**
  - A
  - Abbreviations
  - Alma
  - Anagram
  - Analogy
  - Arch
  - Archaism
  - B
  - C
  - Character
  - Collation
  - Comfortable
  - Crypto
  - D
  - Definition
  - Dictionary
  - Digraph
  - Dun
  - E
  - Encyclopedia
  - Epi
  - Es
  - F
  - G
  - Gar
  - Gloss
  - H
  - Haff
  - Hain
  - Home
  - I
  - Idiot
  - Idioticon
  - Indians
  - Intenseness
  - Inversion
  - Irony
  - J
  - K
  - Kamen
  - Kara
  - Karl
  - Kebir
  - Keang
  - Kirche
  - Kirke
  - Klein
  - Kœnig
  - Koh
  - Kottah
  - Kourd
  - Kremel
  - L
  - Language
  - Logos
  - Lon
  - M
  - May
  - Melas
  - Meta
  - Minster
  - N
  - Naivette
  - Neologism
  - Nees
  - Neu
  - O
  - Omega
  - P
  - Philology
  - Pseudo
  - Pun
  - Q
  - R
  - S
  - Scholia
  - T
  - Tramontana
  - U
  - V
  - Various Readings
  - W
  - Writing
  - X
  - Y
  - Z
- **Biography.**
  - Ainsworth, Robert
  - Aler, Paul
  - Alter, Francis Charles
  - Bos, Lamberti
  - Casaubon, Isaac de
  - Cellarius, Christopher
  - Damarsais, Cæsar Chesneau
  - Forcellini, Egidio
  - Gronovius
  - Harris, James
  - Havercamp
  - Heinsius, Daniel
  - Heinsius, Nicholas
  - Hemsterhuis, Tiberius
  - Kopf
  - Scaliger, Julius Cæsar
  - Scaliger, Joseph Justus
  - Schneider, John Gotlob
  - Schweighaeuser, John
  - Spohn, Frederic Augustus William
  - Vossius, Gerard John
  - Vossius, Isaac
  - Valla, Laurence
  - Valckenaer, Louis Caspar
  - Walker, John

II.

METAPHYSICS.

- **Theology.**
  - Accommodation
  - Angel
  - Assurance
  - Atheism
  - Baptism
  - Baptism of Blood
  - Baptism by Fire
  - Blasphemy
  - Calvinism
  - Calvinists
  - Crypto
  - Deism
  - Demon
  - Dogmas, History of
  - Dogmatics
  - Freethinker
  - Hierarchy
  - Immortality
  - Logos
  - Lord's Supper
  - Magians
  - Mediator
  - Monotheism
  - Mysticism
  - Ontological Proof
  - Pantheism
  - Patristics
  - Pelagianism
  - Polytheism
  - Preadamites
  - Religion
  - Resurrection
  - Revelation
  - Sin
  - Supernaturalism
  - Theocracy
  - Theodocæa
  - Theogony
  - Theomancy
  - Theosophy
  - Trinity
  - Type
  - Worship of God
- **Biography.**
  - Diodati, John
  - Paine, Thomas
  - Paley, William
  - Pastorale
- **Bible.**
  - Abel
  - Abraham
  - Acts of the Apostles
  - Aceldama
  - Adam
  - Adonai
  - Ahasuerus
  - Ahitophel
  - Ajalon
  - Alexandrian Copy
  - Alpha and Omega
  - Amos
  - Anagogy
  - Apocalypse
  - Apocrypha
  - Apocryphal
  - Argentus Codex
  - Ark
  - Athaliah
  - Augean Codex
  - Bartholomew
  - Belial
  - Biblical Archæology
  - Bibliomancy
  - Caiphas
  - Cain
  - Caleb
  - Cambridge Manuscript
  - Canon
  - Caraites
  - Catholic Epistles
  - Cherub
  - Concordance
  - Daniel
  - David
  - Decalogue
  - Deluge
  - Deuteronomy
  - Ebenezer
  - Elijah
  - Enoch
  - Enos
  - Esther
  - Exegesis
  - Ezekiel

Gabriel
Genesis
Gideon
Gog and Magog
Gospel
Habakkuk
Hagar
Haggai
Hagiographia
Halleluja
Harmony
Heptateuch
Hexapla
Hosea
Isaac
Isaiah
Jacob
James, St
Japheth
Jared
Jephthah
Jeremiah
Jesse
Joab
Job
Joel
John the Baptist
John the Evangelist
Jonah
Joseph
Judas
Judith
Lazarus
Levi
Luke
Malachi
Manasseh
Mark the Evangelist
Mary
Masora
Matthew
Melchizedeck
Melita
Micah
Michael
Midianites
Miriam
Moab
Moses
Nahum
Nazarites
Nehemiah
Nicodemus
Nimrod
Noah
Obadiah
Og
Ophir
Paraclite
Paradise
Paul
Pentapla
Peter the Apostle
Philistines
Pontius
Polyglot
Prophets
Psalm
Samson
Samuel
Saul
Septuagint
Shem
Simon Magus
Sirach
Societies
Solomon
Solomon's Song
Targum
Testament, Old and New
Tectrapala
Thomas, St
Timothy
Titus
Tobit
Vulgate
Zechariah
BIOGRAPHY.
Biblical Commentators.
Ainsworth, Dr Henry
Alexander, Noel
Calmet, Augustine
Clarke, Adam
Cunstein, C. H. Von
Griesbach, John James
Henry, Matthew
Kennicott, Dr
Leusden, John
Macknight, James
Messier, Charles
Prideaux, Humphrey
METAPHYSICS.
Anima Mundi
Anthropology
Atoms
Axiom
Demon
Dualism
Emanation
Endæmonism
Esoteric
Genius
Gnostics
Idealism
Imagination
Immortality
Innate Ideas
Intuition
Materialism
Matter
Memory
Modality
Mental Æsthetic
Mental Analysis
Method
Negative
Necessity
Object
Occasional Causes
Ontology
Optimism
Perfectability
Peripatetic
Probabilists
Probability
Psychology
Real
Scholastic
Scholastics
Soul
Spiritualism
Subject
Substance
Teleology
Theory
Transcendent and Transcendental
Transmigration of the Soul
Type
Universal
Will
Wit
BIOGRAPHY.
Metaphysicians.
Hartley, David
Helvetius, Claude Adrien
Hobbes, Thomas
Hutcheson, Francis
Locke, John
Reid, Thomas
Stewart, Dugald
Tucker, Abraham
Scholastic Philosophy.
Bardesanes
Berengarius
Berkeley, Dr George
Bonaventura, John
Brown, Dr Thomas
Bruno, Giordano
Campanella, Thomas
Cardan, Geronimo
Duns, John
Erigena, John Scotus
Eyck, John Van
Hales, Alexander de
Jamblichus
Lully, Raymond
Malebranche, Nicholas
Occam, William
Ophites
Plotinus
Porphyry
Posidonius

III.

MATHEMATICS.

MATHEMATICS.
Analysis
Apparent
Approximation
Asymptote
Calculus
Chance
Circle
Combination
Compasses
Cone
Cycloid
Decimal Measure
Dial, Sun
Diameter
Ellipsis
Evolvents
Exponents
Frustrum
Functions
Generated
Genesis
Given
Gunter's Quadrant
Inclination
Incommensurable
Inflexion, point of
Involution
Irrational Quantities
Lemma
Limb
Line, Mathematical
Limit
Magnitude, Apparent
Maximum
Mean
Negative
Orthographic Projection
Parabola
Parallax
Parallelism
Parallel Lines
Parallelogram of Forces
Plus
Polyhedron
Postulate
Proportion
Rectangular Figures and Solids
Scale
Series
Sine
Solid Angle
Sphere
Spheroid
Table
Tangent
Transcendent and Transcendental
Variations, Calculus of
ARITHMETIC.
Binary Scale
Tetractys of Pythagoras
Roman Numerals
Digital Arithmetic

- Arabic Digits
- European Numerals
- Arabian Computation
- Chinese Computation
- Calculating Machines.]
- Abacus
- Aliquot part
- Alligation
- Calculus
- Ciphers
- Cube
- Decimals
- Digit
- Equation of Payments
- Factor
- Fellowship
- Figural Numbers
- Fractions
- Gunter's Line
- Interest
- Logarithms
- Multiple
- Notation
- Numerator
- Prime Numbers
- Quotient
- Power
- Progression
- Rule of Three
- Sexagesimals

ALGEBRA.

- Analysis
- Binomial Theorem
- Coefficients
- Cube
- Cube Root
- Degree
- Equation
- Interpolation
- Resolution
- Power
- Root
- Surd
- Sursolid

GEOMETRY.

- [Definitions
- Properties of Lines
- Properties of Triangles
- Properties of Quadrilaterals, &c.
- Properties of Circles, &c.
- Geometry of Planes
- Geometry of Solids.]
- Almagest
- Altitude
- Angle
- Archimedes
- Area
- Axis
- Catenary
- Commensurable
- Cube
- Curves
- Cylinder
- Degree
- Diagonal
- Diagram
- Epicycloid
- Exhaustion
- Globe
- Goniometer
- Heights, Measurement of
- Octagon
- Octahedron
- Parallelopiped
- Perimeter
- Perpendicular
- Planimetry
- Points
- Prism
- Progression
- Pyramid
- Quadrature
- Quindecagon
- Spiral
- Square
- Stereometry
- Subtangent
- Subtense
- Supplement
- Surveying
- Tetraedron
- Tetragon
- Triangle
- Triangular Compasses
- Triangulating
- Variable Quantities
- Variation of Curvature

TRIGONOMETRY.

- Circular Parts
- Secant
- Sine
- Triangulating

Biography.

MATHEMATICS.

- Allen, Thomas
- Anderson, Alexander
- Appolonius of Perga
- Attwood, George
- Baker, Thomas
- Behaim, Martin
- Bernouilli
- Blair, John
- Bonnycastle, John
- Borda, Jean Charles
- Bugge, Thomas
- Chastelet, Marquis de
- Condorcet, Marquis de
- Craig, John
- Crousaz, John Peter de
- Demoivre, Abraham
- Descartes, Rene
- Doppelmayr, John Gabriel
- Dupuis, Charles François
- Emerson, William
- Euclid
- Euler, Leonard
- Gehler, John Samuel Traugott
- Godfrey, Thomas
- Gregory, David
- Gregory, James
- Gunter, Edmund
- Hadley, John
- Halley, Edmund
- Hopital, William Francis Anthony de l'
- Hutton, Charles
- Huygens, Christian
- Kæstner, Abraham Gotthelf
- Kepler, John
- Leibnitz, Gottfried Wilhelm
- Lagrange, Joseph Louis
- Lambert, John Henry
- Laplace, Marquis de
- Maclaurin, Colin
- Manfredi, Eustachio
- Maseres, Francis
- Maupertius
- Mercator, Gerard
- Meto
- Molyneux, William
- Monge, Gaspar
- Montucla, John Stephen
- Napier, John
- Newton, Sir Isaac
- Playfair, John
- Ptolemy
- Ramsden
- Reichenbach, George of
- Saunderson, Nicholas
- S'gravesande, William James Van
- Simpson, Thomas
- Simson, Robert
- Toaldo, Giuseppe
- Tschirnhausen, Ehrenfried Walter Von
- Ulloa, Don Antonio di
- Vega, Baron de
- Viviani, Vincent
- Wallis, John

NATURAL PHILOSOPHY.

I.

NATURAL PHILOSOPHY.

- Adhesion
- Air
- Air-Gun
- Air-Pipe
- Air-Pump
- Artesian Wells, *s*
- Asphalte, *s*
- Atmosphere
- Attraction
- Avalanches
- Camsin, *s*
- Capillary Tubes
- Climate
- Cohesion
- Combustion
- Comets
- Compressibility
- Currents
- Dew
- Drosometer
- Dry Rot
- Elasticity
- Electricity
- Experimental Philosophy
- Explosion
- Extension
- Fairy Circle
- Fall of Bodies
- Filtration of Water, *s*
- Fire
- Flame
- Fluid
- Fluids, Motion of
- Fog
- Freezing
- Frost
- Fuel
- Glaciers
- Gravity
- Hail
- Harmadan
- High Water
- Hydrodynamics
- Hydrometer
- Hydrostatics
- Ice
- Ignition
- Light

Mascaret
Meteorology
Microscope, *s*
Mobility
Motion
Neap Tides
Night
Philosophy, Natural
Phosphorescence
Porosity
Projectile
Pyrometer
Rain-guage
Reverberation
Seasons
Siphon
Snow
Solid
Sound
Spring
Spring Tide
Springs
Steam
Summer
Temperature
Tides
Thermometer
Thunder and Lightning
Thunderbolt
Twilight
Vacuum
Vesuvius
Volcanoes
Volume
Wave
Whirlpool
Whirlwinds
Wind
Winter
Zephyr

Biography.
- Anderson, John, F.R.S.
- Bergmann, Torbern Olof
- Boyle, Robert
- Brugmans, Sebald Justinus
- Colden, Cadwallader
- Condamine, Charles Marie la
- Conti, Antoine Schinella
- Fontana, Felice
- Galileo
- Gassendi, Peter
- Guericke, Otto Von
- Hooke, Robert
- Leslie, Sir John
- Leeuwenhoek, Antony
- Lichtenberg, George Christopher
- Marsigli, Count
- Musschenbroek, Peter Van
- Newton, Sir Isaac
- Nicholson, William
- Nollet, John Anthony
- Playfair, John
- Priestley, Joseph
- Reaumur, Rene Antoine Ferchault
- Robison, Dr John
- Rumford, Count
- Saussure, Horace Benedict de
- Seebeck

II.

NATURAL HISTORY.

PHYSIOLOGY

Adam's Apple
Albinos
Albumen
Ambergris
Amman
Anatomy
[Anatomical Preparations]
Animal
Animal Life
Animal Heat
Animal Matter
Antagonist Muscles
Antipathy
Aorta
Aselli
Beard
Bile
Birth
Blood
Bone
Brain
Breadth
Calculus or Stone
Capillary Vessels
Cartilage
Castrates
Catamenia
Cellular Substance, or Cellular Membrane
Chest
Chyme
Complexion
Comparative Anatomy
Concretions, Morbid
Congestion
Constitution
Consumption
Contagion
Convulsion
Corn
Corpulence
Corset
Cough
Cuticle
Death
Diaphragm
Digestion
Dormant State of Animals
Drowning
Dyspepsia
Dwarfs
Ear, and *s*
Egg
Embryo
Epigastric
Epiglottis
Extremities
Eyelid
Face
Fallopian Tubes
Fasting
Fat of Animals
Feeling
Fibrin
Flesh
Freckles
Fruitfulness
Functions
Gall-Bladder
Gall-Stones
Gastric Juice
Gastric System
Hardness
Harelip
Hair
Head
Health
Heart
Hermaphrodite
Horn
Hunger
Hypochondriasis, and Hysteria, *s*
Idiosyncrasy
Incubation
Incubus
Intestine
Irritability
Kidney
Lethargy
Liver
Lungs
Lymph
Mesentery
Milk
Monsters
Mucus
Muscle
Muscular Motion
Natural State of Man
Negro
Nerves
Nose
Organology
Ovary
Period
Perspiration
Phrenology
Physiology
Pia Mater
Picromel
Pregnancy
Puberty
Pulse
Quadruped
Quarteroons
Respiration
Saliva
Secretion
Seed
Senses
Sex
Siamese Twins
Sleep
Skin
Smell
Somnambulism
[illegible]
Sneezing
Spawning of Fish
Spleen
Stomach
Stuttering
Suffocation
Sympathy
Taste
Tear
Teeth
Temperaments
Thirst
Tongue
Twin
Urine
Uterus
Vertebra
Vessels
Voice
Wart
Whalebone
Windpipe
Woman
Wrinkles
Wrist
Yawning
Zoology
Zoophyte

ANIMAL KINGDOM.

Man.
- Albanos
- [See article *Man* for the varieties of the human race]

Quadrupeds.
- Aguti

Ape
Ant Eater .
Antelope
Argali
Armadillo
Ass
Baboon
Badger
Bat
Beagle
Bear
Beaver
Bison
Bloodhound
Buffalo
Bull Dog
Camel
Camelopard
Cashmere Goat
Cat
Chamois
Chinchilla *s*
Civet
Deer
  [Moose Deer
  Rein Deer
  American Elk
  Black Tailed Deer
  Long Tailed Deer
  Mexican Deer]
Elephant
Ermine
Fauna
Ferret
Fox
  [Arctic Fox
  Black Fox
  Red Fox
  Crossed Fox
  Gray Fox
  Swift Fox]
Glutton
Gnu
Goat
Goatsucker
Greyhound
Guinea Pig
Hare
Hedgehog
Hippopotamus
Hog
  [Common Hog
  Wild Boar
  Guinea Hog
  Babyroussa]
Horse
Hound
Hyæna
Ichneumon
Ibex
Jackal
Jaguar
Jerboa
Jumping Mouse
Kangaroo
Lanigera
Llama
Lemming
Lemur
Leopard
Lion
Lynx
Manakin
Marmot
Marsupials
Mastiff
Mink
Mole
Monkey
Mouse
Mule
Musk
Musk Ox
Nyl Ghau
Opossum
Otter
Ox
Paca
Panther
Porcupine
Puma
Quadrupeds
Quagga
Rabbit
Racoon
Rat
Ratel
Rhinoceros
Sheep
Shepherd's Dog
Shrew Mole
Sloth
Spaniel
Squirrel
Tapir
Tiger
Tortoise
Turnspit
Vampire
Weasel
Weevil
Wolf
Birds.
Albatross
Baltimore Bird
Barnacle
Blackbird
Blue Bird
Bustard
Buzzard
Carrier Pigeon, and *s*
Cassowary
Cat Bird
Chough
Cock
Condor
Cormorant
Crow
Cuckoo
Curlew
Duck
Eagle
Eider Duck
Finch
  [Goldfinch
  Canary
  Linnet, &c.]
Flamingo
Flycatcher
Gannet
Goose
  [Snow Goose
  Laughing Goose
  Bean Goose
  Canada Goose,&c.]
Goshawk
Grosebeak
Grouse
  [Wood Grouse
  Black Grouse
  Red Grouse
  White Grouse
  Pinnated Grouse
  Ruffled Grouse,&c.]
Gull
Hawk
Heron
Humming Bird
Ibis
Igauna
Indicator
Jacamar
Jackdaw
Jay
King Fisher
Lady Bird
Lapwing
Lark
  [Sky Lark
  Wood Lark
  Shore Lark
  Brown Lark
  Meadow Lark, &c.]
Loon
Lory
Lyre Bird
Macaw
Magpie
Marten
Mocking Bird
Motmot
Night Hawk
Nightingale
Nuthatch
Oriole
Ortolan
Ostrich
Owl
Paradise, Bird of
Parrot
Peacock
Pelican
Petrel
Phalarope
Pheasant
Pigeon
Pinguin
Platypus
Plover
Puffin
Quail
Redbreast
Rice Bunting
Robin, American
Roller
Ruff
Sandpiper
Snipe
Snow Bird
Sparrow
Sparrow Hawk
Starling
Stork
Swallow
  [Barn Swallow
  White-bellied Swallow
  Purple Marten
  Bank Swallow
  Cliff Swallow
  Chimney Swallow]
Swan
Teal
Thrush
Titmouse
Toucan
Trumpeter
Turkey
Turtle Dove
Vulture
Wag Tail
Whip-Poor-Will
Widgeon
Woodpecker
Wren
Wry Neck
Yellow Bird
Fishes.
Anchovy
Black Fish
Carp
Cod
Crab
Devil Fish
Dog Fish
Dolphin
Dory, John
Eel
Electrical Eel
Flying Fish
Frog Fish
Gar Fish
Goby
Gold Fish, and *s*
Gudgeon
Gurnard
Haddock
Hake
Hermit Crab
Herring
Holibut
King Crab
Lamprey
Lasher
Ling
Lobster
Lump Fish
Mackerel
Minnow
Mullet
Multivalves
Narwhal
Ostracion
Oyster
Pilchard
Pike
Porpoise
Ray
Salmon
Saw Fish
Sea Horse
Seal
Sepia
Shad
Shark
Shrimp
Skunk
Smelt
Sole
Sprat
Sturgeon
Sun Fish
Sword Fish
Tench
Torpedo
Trout
Tunny
Turbot
Walrus
Whale
Whiting
Insects.
Ant
Bee, and *s*

Beetle
Coccus
Cock Chaffer
Cock Roach
Cricket
Crustacea
Earwig
East India Fly
Elater
Entomology
Ephemera
Fire Fly
Flesh Fly, *s*
Fly
Gall Fly
Gnat
Gossamer
Lantern Fly
Locust
Louse
Mantis
Meloe
Mite
Mole Cricket
Moth
Myriapoda
Œstrus
Papilio
Spider
Termites
Tick
Wasp

Reptiles and Worms.
Alligator
Amphisbæna
Animalcula
Asp
Basilisk
Boa
Chameleon
Cobra Da Capella
Crocodile
Centipede
Gecko
Glow-worm
Leech
Lizard
Megalosaurus
Monitor
Polypi
Rana
Rattle-snake
Scorpion
Sea Serpent
Serpent
Serpent Eater
Salamander
Tadpole
Tape-worm
Toad
Venomous Animals
Worm

Fabulous and Non-existing Animals.
Dragon
Kraken
Leviathan
Megatherium
Mammoth
Mastodon
Salamander
Unicorn
Troglodytes

Miscellaneous.
Amphibia
Angling
Animal
Animal Life
Antennæ
Aviary
Bird-Catching
Conchology
Coral, and *s*
Echinodermata
Echinus
Entomology, *s*
Exuviæ
Fascination
Feathers, and *s*
Fin
Flying
Gall
Gallinæ
Generical Name
Giants
Horn
Ichthyology
Incubation
Insectivora
Instinct
Lac
Malacology
Mammalia
Mastology
Merganser
Microscope, *s*
Migration of Animals
Mollusca
Morphology
Mouth
Nest
Orders
Organic Remains
Ornithology
Palingenesy
Pearl
Phosphorescence
Pip
Ruminant
Silk
Sponge
Stemmata
Tunicata
Variety
Wing
Zoolithes
Zoology
Zoophite

Biography.
Adamson, Michael
Aldred
Aldrovandus, Ulysses
Artedi, Peter
Audebert, Jean Baptiste
Banks, Sir Joseph
Bloch, Marcus Eliezer
Bonnet, Charles
Buffon, George Louis Leclerc, Count of
Cazwini, Zacharia Ben Mahommed
Cuvier, Baron
Daubenton, Louis Jean Marie
Ellis, John
Fabricius, John Christian
Forster, John George Adam
Forster, John Reinhold
Godman, John D.
Humboldt, Frederic Henry Alexander
Ingenhouss, John
Lacepede, Count Delaville sur Illon de
Lamarck, Chevalier de
Linné, Charles
Lyonnet, Peter
Neuwied, Prince
Niebuhr, Carstens
Olivier, Guillaume Antoine
Pallas, Peter Simon
Pennant, Thomas
Peron, François
Pictet, Marcus Augustus
Pliny the Elder
Palisot de Beauvois
Ray, John
Sloane, Sir Hans
Soemmerring, Samuel Thomas Von
Spallanzani, Lazaro
Sparrman, Andrew
Spix, John Baptist Von
Swammerdam, John

VEGETABLE KINGDOM.

Botany.
Fructification.
Flower
Leaf
Nectary
Pericarpium
Petal
Receptacle
Seed

Blossoms.
Amaranth
Anemone
Dahlia, and *s*
Daisy
Dragon's Blood
Eglantine
Forget-me-not
Geranium
Gloriosa Superba
Holly
Hollyhock
Honeysuckle
Hyacinth
Iris
Ladies' Slipper
Larkspur
Lily
Lotus
Lupine
Magnolia
Narcissus
Pæony
Passion Flower
Pink
Poppy
Primrose
Ranunculus
Rose
Rose, Acacia
Rose of Jericho
Shepherd's Purse
Skull Cap
Star of Bethlehem
Sun-dew
Sun-flower
Sweet William
Tiger Flower
Tulip
Violet
Wall Flower
Water Lily

Fruits.
Citron
Gourd
Lemon
Medlar
Melon
Mulberry
Orange
Peach
Pear
Plum
Pomegranate
Prickly Pear
Pumpkin
Quince
Raspberry
Shaddock

Trees and Woods.
Alburnum
Alder
Almond Tree
Aloe
Ash
Aspen
Betel
Broom
Cabbage Tree
Cedar
Cinnamon
Cork
Cotton
Cow Tree, *s*
Cypress
Ebony
Elder
Elm
Fan Palm
Fig Tree
Fringe Tree
Fustic Wood
Hazel
Iron Wood
Ivy
Jasmine
Judas' Tree
Kalmia
Larch
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Lime
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Oak
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Palms
Pine
  [The Red Canadian Pine
  The Scrub Pine

  - The True Yellow Pine
  - The Jersey Pine
  - The Pitch Pine
  - The Loblolly Pine
  - The Long-leaved Pine
  - The White Pine
  - The Pinus Flexilis
  - The Pinus Lambertiana
  - The Wild Pine or Scots Fir
  - TheStonePine,&c.]
- Pistachia Tree
- Plane Tree
- Plantain Tree
- Poplar
- Privet
- Rosewood
- Sandal Wood
- Service Tree
- Silver Tree
- Snowball Tree
- Sugar Cane
- Sycamore
- Tallow Tree
- Tamarind Tree
- Tea
- Teak Wood
- Tulip Tree
- Upas Tree
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- Yew
- Willow
- Witch Hazel

Esculent Vegetables.

- Artichoke
- Coffee
- Echalote
- Egg-Plant
- Endive
- Fennel
- French Beans
- Hop
- Horseradish
- Houseleek
- Lettuce
- Lentil
- Liquorice
- Maize
- Millet
- New Zealand Spinage
- Onion
- Parsley
- Parsnip
- Pea
- Plantain
- Potato
- Sweet Potato
- Radish
- Rhubarb
- Rice
- Rye
- Sago, Palm
- Sago, *s*
- Sea Kail
- Sorrel
- Spinage
- Thyme
- Truffle
- Walnut
- Water-cress
- Yam

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- Allspice
- Coriander
- Ginger
- Hellebore
- Mint
- Nutmeg
- Olive
- Pepper
- Sage
- Samphire

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- Acacia
- Acanthus
- Ady
- Agaric
- Algæ
- Alconda
- Alkanet
- Aloes
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- Anda
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- Cactus
- Cassava
- Cassia
- Centaury
- Chamomile, Roman
- Cicuta
- Cloree
- Clover
- Coca, *s*
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- Conia, *s*
- Cryptogamia
- Decandria
- Diœcious
- Dill-Seed
- Dionæa Muscipula
- Dock
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- Endemic
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- Exotic
- Eyebright
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- Frasera Caroliniensis
- Fritillaria
- Fuci
- Fungi
- Furze
- Gentian
- Ginseng
- Golden Root
- Goose-Foot
- Grasses
- Groundsel
- Guava
- Guiacum
- Hackberry
- Hawthorn
- Heath
- Hemlock
- Henbane
- Henna Plant
- Herbarium
- Hickory
- Honey Locust
- Hop
- Horehound
- Hornbeam
- Horse Chestnut
- Hydrangea
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- Juniper
- Lavender
- LeontodonTaraxacum
- Lichens
- Liquidambar Styraciflua
- Liverwort
- Lobelia
- Locust
- Madder
- Mammee
- Manchineel
- Mandragora
- Mango
- Mangosteen
- Mangrove
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- Misletoe
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- Nux Vomica
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- Rafflesia
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- Ratan
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- Rocket
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- Rosemary
- Rue
- Rush Benjamin
- Saffron
- Saint Foin
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- Sarracenia
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- Sensitive Plant
- Sesamum Orientale
- Sessile
- Shamrock
- Skunk Cabbage
- Snake-Root
- Sphagnum
- Soap Berry
- Solomon's Seal
- Soy
- Spruce
- Squill
- Stramonium
- Sumach
- Sweet Flag
- Tansy
- Teasel
- Thistle
- Timothy Grass
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- Alston, Charles
- Bartram, John
- Bartram, William
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- Blair, Patrick
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- Colden, Cadwallader
- Commelin, John and Caspar
- Commerson, Philibert
- Dillenius, John James
- Forskal, Peter
- Garden, Alexander
- Gleditsch, John Theophilus
- Hænke, Thaddeus
- Jacquin, Nicholas Joseph
- Lamarck, Chevalier de
- Linné, Charles
- Lobel, Martin de
- Logan, James
- Michaux, André
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- Mutis, Joseph Celestino
- Thunberg, Charles Peter
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  Red Oxide of Zinc
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Alexander Trallianus
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Aspinwall, William
Andry, Nicholas
Autenrieth, John Henry Ferdinand
Avenzoar, or Ebn Zohar
Baker, Sir George
Baillie, Matthew
Bailzie, William
Bayley, Richard
Bell, Benjamin
Berkenhout, John
Bichat, Marie François Xavier
Boerhaave, Hermann
Browne, Sir William
Brown, John
Buchan, William
Callisen, Henry
Celsus, Aurelius Cornelius
Corvisart, Jean Nicolas
Cullen, William
Dioscorides, Pedanius
Dorsey, John Syng
Formey, John Louis
Fothergill, John
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James, Robert
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Miller, Edward
Moscati, Pietro
Osiander, Frederic Benjamin
Perkins, Doctor Elisha
Radcliffe, John
Reil, John Christian
Swieten, Gerard Van
Sydenham, Thomas
Tissot, Simon Andrew
Tissot, Clement Joseph
Vicq-d'Azyr Felix
Watt, Robert

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Æsculapius
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Bell, John
Bonn, Andrew
Camper, Peter
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Desault, Peter Joseph
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  Achard, Frederic Charles
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  Black, Joseph
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  Glauber, John Rodolph
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  Klaproth, Martin Henry
  Lavoisier, Anthony Lawrence
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  Nicholson, William
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- Arkwright, Sir Richard
- Charpentier, J. F. G.
- Gobelin, Giles
- Dale, David
- Graham, George
- Hermes, Trismegistus
- Hedlinger, John Chas.
- Lehmann, John Geo.
- Loos, Daniel Frederic
- Oberkampf, Christopher
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- Bakewell, Robert
- Columella, Lucius Junius Moderatus
- Crescenzi, Pietro
- Fellenberg, Emanuel Von
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  - Acheri, Luke d'
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  - Ames, Joseph
  - Antonio, Nicholas
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  - Casiri, Michael
  - Galland, Antony
  - Guignes, Joseph de
  - Hager, Joseph
  - Herbelot, Bartholomew d'
  - Hinckelmann, Abraham
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  - Jahn, John
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  - Marsden, William
  - Martyn, Henry
  - Michaelis, John David
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